Comments
on
Federal Communications Commission

Notice of Inquiry

GN Docket No. 09-51

prepared by:

Stratum Broadband, LLC
116 Main Street Suite 207
Medway, Massachusetts 02053
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Preamble to the Response

We want to thank you for the structure and timing of the Notice of Inquiry. We were at first quite concerned that with distributing $7.2 B in stimulus funds without a national plan might lead to a continuation of the patchwork of systems endured in the United States today. Such would not only be an enormous waste of money, but would be very expensive to correct later on. February 17, 2010 seemed an incredible delay relative to the magnitude of the potential downside. However, having carefully read the nature and sequence of your questions, we now have an entirely different perspective.

Whether inspired by careful planning, or just by good fortune, the timing and style of the Notice of Inquiry just prior to the release of guidelines and the Notice of Availability of funds related to the ARRA is a very helpful touch. In reading the individual questions carefully, the essence of the strategic plan is already in your mind. By merely publishing such a plan on pages of paper, the odds are very good that many would not read it with adequate concentration to effect the proper actions that must ensue. But instead, by publishing the list of questions, you are allowing those who are serious about implementing the plan to recreate in their own minds what the strategy should be. Not only that, but by engaging the public in the process and having the public become part of the actual story that is unfolding, you have achieved something else. It now becomes the public's plan, and those who participated in the process will defend the results to the death.

It would be very useful if everyone who is contemplating requesting stimulus funds were to participate in the dialog that goes into the construction of the national strategy. It would also be good if they would attempt to paraphrase their conclusions as to what the national strategy should be just prior to designing their own requests for funding some specific element. Because by considering this next greater context of the national plan, it becomes far easier to see what must be done at the local level. After having completed a response to your Notice of Inquiry, the most useful thing in the world would be for a responder to codify his response into an "Interim Plan" and submit it as an appendix to any request for funds. Part of this Interim Plan would be to identify exactly how the individual project fulfills a particular aspect of the overall national plan. This would provide an additional perspective to all as to whether the request adds value, how much value is brought, or whether the request should be rethought and resubmitted.

There is always the danger that each responder will come up with a different Interim Plan… in this process leading to a chaotic situation. But we are not so sure that this is truly the case. By having been guided down the path by an artful sequence of questions, many who are intellectually honest about the process and who can see a lot of the playing field will come up with relatively a similar plan.

And where there are differences, they are important, too. The differences will account for the specific local situations for which there must be an accounting. But more than that. This is not just a matter of boxes and wires and dollars and cents. This is about achieving a quality of life. A sense of place and a matter of prosperity and happiness. Such things are more determined by the activities and events that occur in a place as

opposed to the brick and mortar and wires that were used to build the place. The approaches to the vertical "high value targets" must address this dimension. So in answering your questions regarding sustainability, adoption, and take rates which are a very objective way of dealing with very subjective subjects, you can now cover all bases with your approach. Very nicely done.

Thus having expressed our thanks for the sophistication and adequacy of your whole approach, we now proceed to respond to your questions.

As was requested, we have repeated your questions and statements in the numbered sequence for the sake of clarity and organization. Our responses are in **blue**. We have left blank those sequences that are statements as opposed to questions seeking comments. We have indicated "Pass" for those items for which we have no comment. We have omitted the footnotes in your original text to focus on the responses.

I. INTRODUCTION

1. This Notice of Inquiry seeks comment to inform the development of a national broadband plan for our country. Its focus is to enable the build-out and utilization of high-speed broadband infrastructure. But barely hints at the importance of what we are undertaking. High-speed ubiquitous broadband can help to restore America's economic well-being and open the doors of opportunity for more Americans, no matter who they are, where the live, or the particular circumstances of their lives. It is technology that intersects with just about every great challenge facing our nation.

2. In the forty years since ARPANET first connected four academic research labs in 1969, the Internet has transformed the way those who have access to it live their lives.[1] Indeed, since the last major revision of the Communications Act[2] in 1996 in which the Internet was mentioned only briefly, the Internet has become an integral part not only of American life, but of global life. In 1996, Americans who accessed the Internet did so largely through dial-up connections. A small percentage of the population subscribed to cell phone service. Cable was a locally-regulated video deliver platform; satellite-to-the-home and the World Wide Web were in their infancy. Today, the majority of U.S. businesses and households have broadband connections, and access to the Internet through a variety of technologies fiber, copper, cable, wireless, and satellite[3] is an integral and critical part of American life.

3. Both wireless and wireline broadband providers continue to upgrade their networks to provide additional broadband capabilities and services to existing and potential consumers. However, there is much work to be done. While Internet access whether provided by wireline, wireless, or satellite technology is now available at faster speeds, in more locations, and on smaller, easier-to-use devices, its benefits are not yet ubiquitous.

4. New, innovative broadband products and applications whether provided by wireline, wireless, or satellite technology are fundamentally changing not only the way Americans communicate and work, but also how the are educated and entertained, and care for themselves and each other. Individuals increasingly take advantage of broadband today for everyday communications with family and friends, sharing files with co-workers when away from the office, uploading videos and photos, collaborating on articles, blogging about local happenings and world events, creating new jobs and businesses, finding nearby restaurants, shopping, banking, interacting with government, getting news and information when on the go, communicating through relay services, and countless additional applications.

5. While all of these developments are encouraging, we have not met the challenge of bringing broadband to everyone.[4] Nor have we managed to keep up with the growing demand for faster and more reliable connections for those who have only basic access now. Many of us, even most of us, have access to broadband. Our goal must be for every American citizen and every American business to have access to robust broadband services. Our goal must be for the United States to be a model for the world in creating a partnership between government and industry to ensure that all citizens have access to broadband. But a goal without a plan is just a wish.[5]

Response: Agreed. This is the premise behind all the responses that follow. For purposes of the commentary and responses below, we will refer to this Item #5 as the "Original Intent." This definition will greatly simplify the basis for most of the explanations.

6. In the recently passed American Recovery and Reinvestment Act of 2009,[6] the "stimulus" legislation, Congress charged the Department of Agricultures Rural Utilities Service and the Department of Commerce's National Telecommunications and Information Administration with making grants and loans to expand broadband deployment and for other important broadband projects. Congress provided $7.2 billion for this effort – no small sum. But even this level of funding is insufficient to support nationwide broadband deployment. With this realization, the Recovery Act charges the Commission to create a national broadband plan. By February 17, 2010, the Commission must and will deliver to Congress a national broadband plan that seeks to ensure that every American has access to broadband capability and establishes clear benchmarks for meeting that goal.

7. We recognize that achieving this goal requires the wholehearted effort of both the private and the public sector. Coupling the dynamic innovations and flexibility of the private sector with the far-seeing policy goals of the public sector can help our nation achieve its broadband goals more efficiently and effectively than either could achieve alone.

8. We seek comment in this Notice from all interested parties on the elements that should go into a national broadband plan. Our plan must reflect an understanding of the problem, clear goals for the future, a route to those goals, and benchmarks along the way. Our plan must also allow for modification as we learn from our experience. And our plan must reflect the input of all stakeholders industry, American consumers; large and small businesses; federal, state, local, and tribal governments; non-profits; and disabilities communities. With this Notice, we begin to make our plan.

Response: With these simple words, each request for stimulus funds for a substantial area needs to attempt to address all these elements.

BACKGROUND

9. We provide a brief overview here and at length in the attached appendix of recent legislation concerning broadband deployment, mapping and future planning.[7] This legislation includes the Recovery Act, which provides up to $7.2 billion in broadband stimulus funds to develop and expand broadband in order to facilitate economic development. The Recovery Act also tasks the Commission with developing a national broadband plan by February 17, 2010. By Congress direction, this plan shall seek to ensure that all people of the United States have access to broadband capability and shall establish benchmarks for meeting that goal.[8] The Recovery Act specifies that the Commission's plan must include an analysis of several specific elements of broadband deployment. First, the Commission must analyze the most effective and efficient mechanisms for ensuring broadband access by all people of the United States. Second, the Commission must include a detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public. Third, the Commission must include an evaluation of the status of deployment of broadband service, including progress of projects supported by the grants made pursuant to this section. Finally, the Commission must include a plan for use of broadband infrastructure and services in advancing a broad array of public interest goals, including consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.

Response: The intent that all people in the United States should be ensured access to broadband capability must be continually emphasized. There will be well-intentioned people charged with enforcing rules of deployment that will need to be reminded of the Original Intent. The vision of ubiquitous access must be able to overrule lapses of judgment that create local rules that confound this basic principle.

The fourth element in this section deserves comment. In delegating responsibility to the various states and territories for propagation of the strategy, the following list seems pretty important to see in each state strategy:

- consumer welfare,
- civic participation,
- public safety and homeland security,
- community development,
- health care delivery,
- energy independence and efficiency,
- education,
- worker training,
- private sector investment,
- entrepreneurial activity,
- job creation and economic growth

For instance, if a state were to establish a strategy that did not at least cover a program within each of these different categories where broadband can be useful, one would

consider the state plan incomplete in some respect. There can be other elements in states' plans reflecting local needs, and one program could be used to cover multiple subjects in the spirit of collaboration and smart efficiency. But this would be a good measure of the effectiveness with which each state or territory is carrying out its responsibility relative to the goals.

10. Recent legislation also includes the 2008 Farm Bill, which calls for a comprehensive rural broadband strategy and interagency response, and the Broadband Data Improvement Act of 2008, which focuses on data collection that will identify areas still unserved and provide insights on consumer needs related to broadband. A separate background appendix also provides a brief outline of the Commissions efforts to date to expand broadband availability through universal service policies, to make spectrum available for wireless broadband services, and to improve broadband data collection.[9]

III. DISCUSSION

11. In this section, we describe our approach to developing this plan and request comment on key terms of the statute. We also discuss a number of specific policy goals outlined for the plan in the Recovery Act and how the various governmental agencies and other participants at all levels can best coordinate to achieve these goals.

A. Approach to Developing the National Broadband Plan

12. The Recovery Act states that no later than 1 year after the date of enactment of this section, the Commission shall submit to the Committee on Energy and Commerce of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate, a report containing a national broadband plan."[10] In creating a national broadband plan, we ask, ultimately, how the Commission can identify and promote the best and most efficient means of achieving this congressional mandate.

Response: By beginning with this tactic of Notice of Inquiry questionnaire, the universe of ideas will begin to roll onto the table for input. Good ideas, bad ideas, big ideas, small ideas… every idea is okay. The questions are well seeded, including the request for ideas that were not suggested by this preliminary list outlined in the Notice of Inquiry. To cope with the plethora of input you will receive, look at each input that you receive. Then distill the input so that you are down to unique thoughts on each matter. Pause for a moment of relaxed subconscious reflection, and then refer back to your primary directive as outlined it item #5 above: the Original Intent.

13. As we consider this task, we keep in mind and follow the instruction Congress provided to the Commission in the Recover Act and seek comment on each element of the instruction. First, we to seek comment on how to implement a plan to ensure that all people of the United States have access to establish broadband capability, including how to address the Congressional directive to benchmarks for meeting that goal.[11] How should broadband capability be defined going forward, and what does it mean and to have access to it? Second, we seek comment on how to provide analysis of the most effective and efficient mechanisms for ensuring broadband access for all people of the United States.[12] Third, we seek a comment on how to develop detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service for the public.[13] Fourth, we ask about how the Commission should evaluate status of deployment of broadband service, including progress of projects supported b the grants made pursuant to this section.[14] Fifth, we seek comment on how to a develop plan for use of broadband infrastructure and services in advancing a variety of policy goals.[15] We also seek comment on how we should evaluate the development of a national

broadband plan in light of a variety of other related statutory directives and whether additional elements should be included in the national broadband plan. Finally, because this plan will not be solely the Commissions to implement, we seek comment on how the Commission, in both the development and implementation of a national broadband plan, should work collaboratively with other agencies at all levels of government, with consumers, with the private sector, and with other organizations.[16]

- ***Response***: These general questions are all addressed at a more detailed level in the remainder of this response.

B. Establishing Goals and Benchmarks

14. In this subsection, we seek comment on how to implement a plan "to ensure that all people of the United States have access to broadband capability," including how to address the interrelated Congressional directive to "establish benchmarks for meeting that goal."[17]

1. Defining Broadband Capability

15. Broadband can be defined in myriad was. In order to ensure that all people of the United States have access to broadband capability, we must make sure that the Commission appropriately identifies goals and benchmarks in this regard. Here, we seek comment on how the Commission should define broadband capability.[18] In the discussion below, we seek comment on how this definition should capture the various issues we should consider as we define broadband capability, including how to take into account the various existing and emerging technologies.

16. For instance, the Commission currently uses the terms "advanced telecommunications capability,"[19] "broadband," and "high-speed Internet."[20] Should these definitions be unified, or should they have separate meanings for different purposes, keeping in mind that current and future broadband high-speed platforms will increasingly support "Internet" as one of several offered services including voice, video, private data applications, and the like? In addition, to the extent that broadband is defined by "speed," should the Commission consider raising the speeds that define broadband? Should we distinguish among the various broadband technologies? Are there specific Commission actions that could encourage more rapid adoption of these more advanced broadband deployments using mobile wireless technologies, such as Worldwide Interoperability for Microwave Access (WiMax), Long Term Evolution (LTE), or wireline broadband deployments, such as fiber, DSL, or coaxial deployments supporting DOCSIS 3.0, for example? Are there other advanced broadband technologies that, if deployed, might better position the nation's broadband infrastructure for continued evolution?

Response: As lexographers, the definition of words is not static, but continuously susceptible to evolution of meaning due to current usage. Some phrases we can coin for our own special purposes. But when words have generally accepted meanings throughout the world, coining a new meaning for a word already in common usage introduces obfuscation in an area where we are trying desperately to be clear.

From the Wikipedia, the "**Internet"** is a global system of interconnected computer networks that use the standardized Internet Protocol Suite (TCP/IP). It is a *network of networks* that consists of millions of private and public, academic, business, and government networks of local to global scope that are linked by copper wires, fiber-optic cables, wireless connections, and other technologies. The Internet Protocol Suite is defined by a fairly rigidly defined set of specifications controlled by the Internet Engineering Task Force through the Request For Comment process. This definition is

widely held throughout the world today. To coin a different meaning from that which is already widely held and documented would not serve a useful purpose.

From the Wikipedia, The term ***broadband*** can have different meanings in different contexts. The term's meaning has undergone substantial shifts. *Broadband* in telecommunications refers to a signaling method that includes or handles a relatively wide range (or band) of frequencies, which may be divided into channels or *frequency bins*. *Broadband* is always a relative term, understood according to its context. The wider the bandwidth, the greater the information-carrying capacity. *Broadband* in data can refer to broadband networks or broadband Internet and may have the same meaning as above, so that data transmission over a fiber optic cable would be referred to as broadband as compared to [slower speed mediums]. However, *broadband* in data communications is frequently used in a more technical sense to refer to data transmission where multiple pieces of data are sent simultaneously to increase the effective rate of transmission, regardless of data signaling rate. In network engineering this term is used for methods where two or more signals share a medium. *Broadband* in analog video distribution is traditionally used to refer to systems such as cable television, where the individual channels are modulated on carriers at fixed frequencies. In this context, baseband is the term's antonym, referring to a single channel of analog video, typically in composite form with an audio subcarrier. The act of demodulating converts broadband video to baseband video. However, *broadband video* in the context of streaming Internet video has come to mean video files that have bitrates high enough to require broadband Internet access in order to view them. Some of the broadband services described require special controls relative to latency, jitter, and loss to make them acceptable for the human perception purposes for which they were intended.

The upshot of all this is to say that for clarity's sake, we should use the term "Internet" to describe for the moment a communications mechanism that uses the Version 4 form of TCP/IP protocol as defined from time to time by the Internet Engineering Task Force for this is what the majority of the world means by the Internet. It has an interface and a behaviour that people have come to expect. When we mean a version that has capabilities beyond Version 4, we should for the moment clarify the capability by stating the version or by an appropriate alias that has wide usage.

As for the term "Broadband," we should stick with the engineering definition so that we do not lose some of its critical meaning… this being the ability to transmit streams of signals using protocols in addition to Internet Protocol. Also the ability through different "colors" to transmit information in parallel. Also other abilities to control and regulate the quality of service and quality of experience that is somewhat unpredictable because of the best-effort convention on the world wide Internet today.

When we mean Internet services transmitted over a broadband connection, we should probably refer to this as "Broadband Internet".

The term "advanced telecommunications capability" is a term that has been coined for the occasion and should be given a special definition so that it is clearer in meaning. As

used in the context of the various bills, conference, and statutes, the implication is that advanced telecommunications capability has something to do with speed, capacity, or other measures of performance. The word "advanced" is especially a relative term in that what seems advanced today may not seem so advanced at all next year. We are taken by the reports from South Korea that in cities that now enjoy gigabit service to the home, the users soon lament that the thrill of the service is now gone in that the speed is now the norm. [This confirms the fact that there are certain things in life of which one can never attain too much.] So although the term "advanced telecommunications capability" may be a little misleading, we can define it for the moment in terms of performance numbers and/or in terms of qualitative matters that can be measured numerically.

In deciding what is advanced, we should probably keep in mind the vision contained in the Original Intent that recognizes that we are operating in a competitive global economy and that if we are to be looked at as a "good" example as opposed to a "bad" example, speed is going to be really important. Also, as people's lives will be at stake as the dependency on the reliability and availability of the advanced services, we should be mindful of the difference between a high school science experiment and commercial strength capability.

The analysis by Educause that provides a sliding scale of what "advanced" means would have us set a vision that achieves the following goals:

- 2012: Advanced Telecommunications Capability = 100 MB service over fiber
- 2015: Advanced Telecommunications Capability = 1 GB service over fiber

These numbers are based on global expectations which ignore any problems that the United States may have with its existing plant.

Mobile services will be guided more by the global community drive toward LTE services. The expectations here will be driven by what the competitive offerings make available each year. So we could look at the average speeds and capabilities commercially available in the top three countries. Depending on whose poll is regarded as authoritative, this year's top three might be Japan, South Korea, and France.

These speeds would determine what "advanced" means from a world opinion standpoint. You should of course offer tiers underneath these norms to allow service to progress towards world levels. But the fact of the matter is that we are a nation of smart people. Given any particular goal like "advanced" communications capabilities, smart people will generally always be able to hit the target. There is nothing in the drinking water here in the United States that prevents us from competing well with these other countries. It is more of a matter of where you set the target. So set the expectation and then expect results. There is no technological breakthrough required here.

In this fashion, separate services can be defined such that one might be called "Internet" and others might rightfully be called "Premium Voice," "Premium Video," and "Private Data" for the quality of service, quality of experience, and privacy capabilities that may require special handling to achieve. In the mean time, given enough speed and capacity, our definition of Internet services will cover an enormous amount of territory.

Concerning WiMax service, now that most of the choice spectrum has been accumulated

by a single carrier, it is uncertain what the FCC could do to incentivize that one carrier to expand coverage any more rapidly that they are already doing given their financial means. However, if the were mechanisms available for partnering with that primary provider to use spectrum in rural locations and then support roaming arrangements to create a ubiquitousness as the cellular industry has done, this has great promise. Some of this activity is already going on, but it is more like sticking one's toe in the water compared to how many unserved areas remain. Success in this area might be defined more in terms of 10's of thousands of locations as opposed to hundreds of locations.

With regard to LTE, the primary step will be to define this service as a "broadband" service so that broadband grants may apply to it. Otherwise it runs the risk of being labeled a "cellular" technology and therefore being susceptible to being denied by the RUS as a technology worthy of supporting. A simple matter of semantics and the stroke of a pen will head off any misunderstanding on this point.

Concerning wireline technologies, we have no real comment to add except that from a capacity standpoint, the concept of service is really an end-to-end arrangement from the standpoint of what the consumer believes he is buying. New access technologies such as broadband over powerline, special frequencies for special purposes, and special sharing arrangements are all just individual components of the larger performance and capacity model. As long as the technology can effect transmission and offer acceptable performance in terms of consumer expectations, then it should be okay to use.

17. We also seek comment on whether a definition of "broadband" should be tethered to a numerical definition or, instead, an "experiential" metric based on the consumers ability to access sufficiently robust data for certain identifiable broadband services. In this regard, should we define broadband in terms of bandwidth and latency, capability to download a certain type of media in a certain amount of time, ability to access a certain online service or operate a certain application without depreciation in quality, or by some other metric? Furthermore, should such performance metrics apply only for the local access link, for the end-to-end path, or some other portion of the network? To what extent should our consideration of access to broadband capability take account of the middle mile? Much of the focus on broadband deployment has been on last mile connections. Is there a need, for instance in rural areas, for a greater focus on broadband capabilities in the network beyond last-mile connections? How robust are broadband capabilities in backbone and feeder networks throughout the country?

Response: The choice between defining broadband in terms of its potential speed vs. other attributes depends on its intended use by the intended subscriber. When deciding to purchase a car, depending on who the customer is, there may be more factors of concern than the fact that it can top in at 140 miles per hour. Depending on the use of the car and the age of the driver there may be other needs like how much does it cost, storage capacity, miles per gallon, serviceability record, and the like. But they need to be stated in such a way that is easy for the consumer to understand the value from his own perspective.

This being said, there are very real matters concerning the human perception surrounding the measures of latency, jitter, and loss that once understood make an enormous difference in the fidelity of the communication and fitness for a particular purpose. The Internet has grown enormously popular and useful through its ability to be assembled

organically as opposed to a top-down build. Its ability to handle so many applications on a best-efforts basis makes it marvelous in its ability to spontaneously expand. But then again, there are those who genuinely appreciate high definition television flawlessly delivered, crystal clear business telephone calls that allow you to clearly sense the mood of the other person on the other end, mission critical latency controls that allow you, among other things, to get a little edge on all comers in a multi-player video game. Such additional capabilities appeal to the value systems of the individual subscriber to the point that they are worth paying for.

The service is experienced from the perspective of the subscriber. It really is an end-to-end experience. The local access link is certainly an important link in the chain, but in most of our engineering study on the matter, it is the middle mile that breaks first when accommodating the increased demands for emerging new services and expectations. For services that lend themselves to simultaneous distribution, the national backbone needs to have multicast capabilities, quality of service controls, and enough capacity expansion to deal with the onslaught of video traffic in an ever upwardly spiraling fashion.

Our examination of the model for several states as to how the distribution needs to work given this larger context of the national backbone is as follows:

- The national backbone needs to reach every state in the United States in at least two or three places within the state. We will call these locations carrier hotels for the moment. At each of these points, it is optimal to have the choice of at least three different national carriers that can diversely reach each of the other state level carrier hotels. Transit service for interconnection to the "Internet" is an important service at each of these locations. But as we have defined so far, Internet service is not the only "broadband" service that is needed for entertainment and business communications in the world today. Each of the three competing national carriers should be free to also offer private services as long as it is clear that they are different from "Internet" services.
- We will call the feeder networks "distribution" or "middle mile" networks. From our studies of the various states, there are two sections of the distribution networks that are important: that from the state level carrier hotel entrypoint to a regional network within a state, and from the regional network entrypoint to a convenient "access point" in a small community or a neighborhood in a larger city. The reason we distinguish between these two sections is that in many cases they are owned by different organizations, each with a different business case, payment arrangement formula, and administrative domain.
- And then from the access point to the user (fixed or mobile), we have the last mile.

The reason for this lengthy description of the 3 – 4 levels of hierarchy that is typical of a broadband environment is to explain that the subscriber doesn't really care about all this apparatus and wants it to be invisible. However, if any one of these sections fails to perform, runs out of capacity, or breaks down interrupting the service, the whole service fails to meet expectations. So who is to blame when expectations are not met? The only group capable of taking responsibility is the retail service provider who sold the end-to-end service in the first place. Can the retail service provider actually take responsibility

for this? Of course he can. But he needs the same level of support that he has contractually obtained from the other members of the supply chain.

Therefore, two things are clear. You should ensure that the concept of the supply-chain is solidly in place and that there is enough capacity in the middle miles to support the expected demand for services from all Americans… in particular those in rural and unserved areas. This is in addition to the highly visible last mile to people's homes and mobile locations.

The second thing that is clear is that history repeats itself. And each time a supply chain and ecosystem like the one we are creating comes together, there will need to be a clearing and settlements house that simplifies the burden of interexchange of payments between the carriers. This was true of the cellular industry, true of the airline industry, and true of the worldwide banking system. If we are to speed the proliferation of broadband in the United States, we must facilitate the business process that always arises as networks like this emerge.

To prevent the patchwork quilt effect of the proliferation of high school science experiments, you must watch the expansion of the national backbone, you must examine the capacity and resiliency of the middle mile distribution networks within each state, and you must watch the deployment of last mile segments to truly know what the real capacity is of the of the United States broadband capability.

We did not say regulate nor did we say control. But suggestions and grant programs will go a long way toward filling in the holes. And you must be able to see what is going on to be effective. By extending the current mapping exercise that is going on in the ARRA program, it would be very convenient if the hierarchies of the middle mile vs. the last mile could be made clear. One could even imagine a SimScript model exercising the map a bit to illustrate where the queuing phenomena arise and mysteriously rob the national network of effectiveness through unexpected choke points.

How is this different from what is going on right now? The difference is the expanded common understanding of what the middle mile means to the Original Intent and how to measure the real expansion and capability. This importance is only a rumor right now in many people's minds.

18. We also request comment on whether a definition of broadband should be static or dynamic, with speed tiers that adjust with changes in technology.[21] Further, we seek comment on the definitions for broadband used by other government agencies and how an such definition by the Commission would impact the various government programs designed to improve consumers access to or use of broadband services. For example, should the Commission define broadband in the same manner as other agencies charged with implementing parts of the Recovery Act? We also seek comment on any broadband definitions used in other nations or international organizations that may be useful to the Commission in this proceeding.

Response: As was described in Item #16 above, tiers will be very useful. There are practical reasons why the United States has gotten itself into the dilemma it is in, and quick fixes with DSL and cable services should not be ruled out. But at the same time, let us keep in mind the Original Intent was to win the game as opposed to just finish the race.

We believe that the European Union has a particularly straightforward definition of "Open Access" that will be useful as it has been the law of the realm for quite some time over there. Also, Paul Budde's commentary on open access from Australia blends many of the principles about open access from around the world into suggestions that may be useful for the United States.

Relative to adopting a common language for broadband among agencies, we believe that it would be easier if the FCC provided definitions that might be useful for other agencies to use when it comes to communications matters, but as it is with any other form of lexicographical situation, unless the authority of the FCC is recognized as useful, other words will spontaneously come into being within other agencies regardless of attempts to prevent lexical sprawl.

19. Because a range of technologies may be used to provide broadband services in a variety of situations,[22] we seek comment on whether to adopt different definitions or standards of what constitutes broadband based on the technology being used to provide the service or the context in which the service is applied, or some combination of both. For instance, should a different set of standards be used to identify mobile broadband services which allow mobility or portability but may have lower throughputs and fixed broadband services? Should the definitions vary depending on whether the broadband service is used to serve residential or business customers and if so, how? Should rural regions, with their inherently higher deployment costs, have different definitions or standards for broadband than urban areas? How should satellite technology with comparatively limited bandwidth and higher latency but potential lower cost of deployment in rural regions be accounted for? Should our definition include some baseline dependability metric? Are there other dependability concerns, such as susceptibility to weather disruptions, that need to be addressed now or in the future?

Response: There are inherent differences between mobile technologies and wireline technologies because of the mobility function itself. Beyond the mobility issue, the services that are based on broadband are reduced very rapidly to a handful of principles. Whether a particular technology delivers well on these principles or not is another matter. But what is important to the services that ride on any transmission path are the handful of generic capabilities that are needed.

There are generic needs that are inherent in the following styles of service:

- A "business" telephone call
- An HD television broadcast channel
- A mission critical, low latency response channel for Citrix or MTS-based teleworking connections
- A pseudowire cellular telephone backhaul connection
- An interactive telepresence session

These needs have to do with capacity, performance, and qualitative measurements for latency, jitter, packet loss, and in some cases mean opinion score. You could come up with a set of profiles that define these services so that the profiles could be referenced by name, but that the specifications of the profiles define the standards for minimum acceptance. But then as technology proceeds, you would need additional profiles.

The profiles need not differ for residential or business service. As an example, most of our engineers subscribe to both residential and commercial FIOS services at our homes so that we can do all the things that we normally do at home. This seems to be more of a billing and service provisioning issue as opposed to any fundamental difference in what a telephone call is.

There are different expectations for wireless as far as usable bandwidth, reliability, dropped service, weather conditions. As long as it is clear that wireless service is engaged, the user's expectations are clearly set. There should be no difference in how the services are defined for rural regions. The costs are an internal matter for the wholesaler and the retailers to work out. Note might be taken of the rurality of the location, but the prices should be compared to urban pricing as well.

Satellite service with all its limitations is a welcome addition when the other option is no service at all. This is especially true in Florida just after a hurricane has toppled cellular service or in Los Angeles when an earthquake has taken out much of the traditional communications services.

We think that dependability should be measured and provided for guidance, but not necessarily in the definition of the service. It is a quality measure as opposed to a service definition.

20. In shared bandwidth broadband access technologies, how should actual speed delivered to consumers be determined, taking into account that for wireline systems, frequency bandwidth, the number of simultaneous users, and distance to the end user affect the data rates delivered? In addition to the bandwidth and number of simultaneous users, the data rates delivered to wireless end users depend upon, among other factors, transmitter power, frequency re-use, and the distance between the end user and the base station. More specifically for actual speeds on a wireless network, should they be determined at the edge of the service contour, and if so, what service contour level would define the edge of service? To what extent should the number of simultaneous users be considered when defining the individual end user data rates since the network capacity may be shared with many other users at the local level? In general, how should the speeds and other characteristics of services delivered to consumers be determined?

Response: In shared bandwidth broadband access technologies, there are basically two types of access strategies. One in which each individual service to each location from each active service provider has a guaranteed bandwidth rate and an established forwarding priority. The second is a best efforts strategy in which each user contends with every other user on the network for contention-based services. The first works well where private broadband services are allowed and the second is essentially the Internet style of best efforts services. The two styles are not mutually exclusive, but they each require electronics to support their particular strategy. The private services can be measured at the last active point before entering a subscriber's premises, while the latter can really only be measured at the headend of the neighborhood transmission point.

Even where guaranteed access service is available the issue of service delivery is still not so straightforward. As we come to the issue of the middle mile as in Item #17 above where the distribution was described, there is again a decision to be made about whether guaranteed service for an individual service instance is enforced by dynamic policy based management of the transmission, or whether it is a matter of provisioning enough

capacity so that the middle mile does not become the bottleneck. Service providers responsible for end to end path service across the middle mile and the national backbone itself, typically must make the decision of whether over commitment of resources is part of what they want to sell or not.

If there were a metric to be measured relative to a service provider's capacity, it might be the 95th percentile busy hour utilization at the access level and at the entrances to the middle mile and the national backbone. Somehow this seems very esoteric relative to what a typical consumer could relate to, but some form of gold, silver, bronze award might be made for both private line and Internet grade services.

The wireless technologies will be harder to make simple. Actual performance is going to depend on propagation distance to the nearest base stations, transmitter power allowed, and frequency reuse. Many of these factors are beyond the service provider's control. On the other hand, as long as there is a market selection in effect, the consumers will navigate to the service provider with the best performance when balanced against other non transmission performance values.

21. We also recognize that broadband services are provided under our provisions for the operation of unlicensed radio transmitters.[23] For example, Wi-Fi hotspots provide access to broadband service at hundreds of thousands of locations throughout the United States and the world at locations such b as airports, hotels, coffee shops, and retail establishments. Unlicensed technologies are often used Wireless Internet Service Providers (WISPs) to offer broadband service in urban, suburban and rural communities.[24] Unlicensed technologies are increasingly incorporated in devices operating under our licensed radio services rules to enhance consumers broadband experience, such as cell phones that include Wi-Fi broadband access capability. We also note that the Commission recently established provisions for unlicensed devices to operate in the TV white spaces, which hold promise for the introduction of new broadband services.[25] In addition, the Commission has established rules to provide for broadband over power line service where the electrical distribution grid can be used for deliver of broadband services.[26] We invite comment as to the state of deployment of broadband services that are offered under our rules for unlicensed devices. Should they be considered as a means of providing broadband service, particularly where no other service exists? If so, how should that service be defined or quantified since unlicensed devices are not necessarily associated with specific areas of operation? We note that unlicensed devices operate on a non-interference basis and must share spectrum with all other such devices. Accordingly, a particular quality of service or data speed often cannot be assured. Should we treat data speeds and metrics for unlicensed devices and services differently because the sharing scenarios and their impact on reliability and data speeds are difficult to predict?

Response: Unlicensed technologies should be treated differently in terms of speeds and metrics because of the unpredictability of any specific instance of service. These unknowns should be counterbalanced by the convenience for the casual user.

22. With technology developing at such a rapid pace, it is important that we do not lose sight of the potential for monumental shifts in technological platforms that would render definitions obsolete or indeed harmful to developments that might otherwise take place in the market. We thus seek comment on how potential definitions that we apply in furtherance of a national broadband plan can be effectively designed, *i.e.*, appropriately focused to achieve important social goals but sufficiently flexible to adapt to a continuously and rapidly changing technological environment.

Response: We do not comment here on the social goals, but recommend an annual review of definitions relative to new technologies that manifest themselves during the year.

2. Defining Access to Broadband

23. The Recovery Act sets a goal for the national broadband plan of seeking. "to ensure that all people of the United States *have access* to broadband capability."[27] We seek comment on what it means to have access to broadband capability. For instance, we seek comment on whether our determination of availability should take into consideration the provision of broadband at locations, such as at home, at work, in schools, in transit, in libraries and other similar community centers, and at public Wi-Fi hotspots. Further, we seek comment on how to interpret this term regarding access for businesses and other non-residential entities, including those that may serve as anchor tenants in a community. We also seek comment on whether to interpret the term differently depending on the technology used or whether it is used in a fixed, nomadic, or mobile context. Further, we seek comment on any similar definitions of access to broadband used by other nations or international organizations that may be useful to the Commission in this proceeding.

Response: Ultimately, the access should be wherever the person happens to be. But in the mean time, programs should be put in place to offer coverage wherever convenient locations are. (There is a difference.) Each of these venues should be encourage with some sort of measurement as to how frequently the average person is without access:

- Home
- Work
- Mass transit
- Personal transit
- Libraries
- Community centers
- Public Wi-Fi hotspots
- Mobile data connection

The local strategy should be to determine what percentage of time a person cannot access the Internet during the day. Such measurements should be made through market research and analysis and then to work locally to minimize this number. 95th percentile should be sufficient for the moment.

Businesses and anchor tenants such as government offices and mobile locations have no real relevance as to what individual services should be given the emphasis on entrepreneurism discussed later on. Any current FCC rule that in any way inhibits any individual from reaching the Internet using any resources provided by federal funds should be crushed viciously with the stroke of a pen. Such prohibitions artificially invoked by the FCC should be regarded at this juncture of contemporary times as the hobgoblin of little minds of the past.

We have no further comment other than those already expressed relative to fixed, nomadic, or mobile context. There should be no bias relative to technology that allows people to access the Internet. (We state this because there are rules currently on the books that prevent this obvious path given the Original Intent you stated at the beginning of this document.) This is an obvious moment to clean up the sins of the past.

24. We seek comment on whether (and if so, how) the Commission should evaluate the term "access" with certain basic consumer expectations in mind. In 2005 the Commission adopted an *Internet to Policy Statement* in which it committed to "preserve and promote the vibrant and open character of the Internet as the telecommunications marketplace enters the broadband age" by incorporating four consumer-based principles into its ongoing policymaking activities.[28] We seek comment on whether, in developing a national broadband plan, we should consider applying these principles more broadly in light of the evolving ways providers store, distribute, and otherwise provide service via broadband access facilities, particularly in ways that are not carried over the Internet. We ask if these principles require elaboration or explanation in light of the telecommunications environment that has evolved since their adoption, and whether the Commission should turn the principles into rules through a rulemaking. We ask, too, that commenter's describe the relevant distinctions between the technical capabilities of the broadband connectivity and the source and nature of the services made available via broadband. Overall, we seek comment on how the Commission should develop a national broadband plan in light of these policies.[29]

Response: Pass

25. To what extent should the Commission consider price or marketplace competition for broadband as it considers whether people have access to broadband capability? For example, how should the Commission consider the benefits of consumers in a particular area having only a single provider, using one type of technology, versus the competitive benefits that could result from having one or more providers using similar or different technologies? How should the national broadband plan establish priorities for unserved areas versus areas with limited competition and capability?

Response: Areas that have only one service provider are burdened by a monopoly service delivery. Areas that have only two service providers are still underserved for similar reasons. Only when there are three service providers does the magic of the marketplace begin to emerge. This is well documented since the days of the Renaissance. A small distinction between mobile and fixed transmission services might be considered, but when referring back to the Original Intent, this matter is more easily considered.

By way of comparison, a MacDonald's hamburger costs about the same in a rural environment as it does in an urban environment. Competition provides the pressure that causes this effect.

26. What benefits to consumers are unique to different broadband technologies? How should the Commission consider the different qualitative features discussed above in the definition of broadband, such as latency, peak download speed, and mobility? What metric should be used to define wireless access? For instance would an end user have access if located within a particular service contour? Or would it be based on measured data rates at the end user location? Should the Commission consider access to wireless broadband from satellite or cellular providers in areas that are not served b wireline systems differently from areas where wireline services are available? Moreover, how should the Commission view the price constraining and substitutability relationships between various fixed wireline services and between fixed wireline services and fixed or mobile wireless services, including both terrestrial and satellite services? How would

speed definitions and other regulations attached to grants, loans and universal service distributions affect affordability and pricing of services?

Response: Pass

27. We also seek comment on the extent to which access hinges on affordability.[30] For instance, how should the Commission consider broadband services fully deployed to an area, but set at a subscription cost that is unaffordable to some or many residents of the area? Commenter's should discuss other distinctions that may be relevant and should be taken into consideration in developing a national broadband plan.

Response: This is more of a global question. In terms of affordability, how does the price stack up against the price of the equivalent service in the top three countries we are competing with? Until the prices are comparable, the work is not done.

28. *Access for People with Disabilities.* We seek comment on what it means for a person have with disabilities to "have access" to broadband capabilities.[31] Both Congress and the Commission have understood the tremendous value that broadband networks can bring to improving communications with and among people with disabilities and bringing opportunities to them.[32] We also seek comment on how broadband services, including, for example, Internet-based telecommunications relay services, have a positive impact on the ability to communicate for persons with disabilities, as well as how the needs of people with disabilities should be included in the national broadband plan.[33] For example, we seek comment on whether, and if so, how, to ensure that the technical characteristics of current and future broadband networks align with the needs of disabled citizens.

Response: The following are important considerations related to communicating with persons with disabilities:

1. Being "accessible" means all parts of the communication experience must be accessible.
2. The content itself the user is working with must be ADA Section 508: for videos, this means captions and audio description; for graphics, this means alt tags; for web navigation, searches, these must also be 508 compliant.
3. The means of using/interacting with the content must be 508 compliant
4. 508 complaint training materials for persons with disabilities (PWDs) using technology must be part of the "package".
5. The content itself must be accessible. Many PWDs have low literacy. Accessibility requires content being provided at a literacy level appropriate for individuals with cognitive disabilities as well as low literacy.
6. "Economic accessibility" is a vital part of this, too. PWDs must be able to *economically* access the technology

We believe that people with the following types of disabilities should be specifically addressed in the broadband strategy: blindness, limited vision, deafness, hard of hearing, autism. There are many more types of disabilities that deserve individual assistance, but these are an important first selection along with the need for an R&D program to extend the list.

The programs we have been involved with such as the National Library Technology

Program e-book initiative directly address these disabilities. We recommend that this program be expanded and enhanced through R&D investments and then special adoption programs for propagation of their use with viral expansion technique.

3. Measuring Progress

29. In order to develop a national broadband plan, we need up-to-date and complete information on existing broadband deployment and possible future deployments. The Commission collects a variety of information regarding broadband subscribership.[34] We seek comment on how the Commission's existing data collections, as well as ones that we could undertake, can play a role in measuring our nation's progress toward the goal of ensuring that all Americans have access to broadband. Specifically, we seek comment on which metrics the Commission should use to measure progress and how such metrics capture the variety of communities and technologies across the nation. Further, we seek comment on how the information collected from consumers based on the periodic consumer surveys may assist the Commission in establishing or measuring progress.[35]

Response: Your data collection activities will be several and varied. But it has occurred to us that the monies being contemplated for the broadband mapping exercise do not necessarily need to be an independent siloed effort. Indeed, once the preliminary plan of how to collect maps from the individual states and territories is in mind, you can integrate them to reveal the entire United States. With a little planning behind your data gathering, you can create data layers that can meaningfully reveal the progress toward deployment. Despite what you may have been told, you can collect data right down to the household level. As you near this goal of granular data that is displayable, your measurement efforts can play a role in our nation's progress toward the goal of ensuring that all Americans have access to broadband.

In thinking about this beyond simplistic concepts we must ask the question, "Who is going to use this data?" A number of ideas come to mind: primarily the concept that this data and technique are very useful to the teams in the various states that are charged with deploying the broadband rollout itself. Consider the following arrangement: The map of the United States reveals the national picture, but in reality underneath it is broken up into each of the various individual states that are individually viewable. Your basic data layers are all organized and partitionable by individual state. Furthermore, you make your state views of the maps accessible through the miracle of contemporary GIS technology so that the individual states can add their own additional layers for more detail than you have in your standard collections. In the true spirit of things, you make arrangements to be able to see the maps with all the state provided layers also. In a way, this is data collection also even though you did not have to do any specific work to collect it. But there will need to be some coordination so that you will know what you are looking at.

Now this is interesting, but the next question has to be asked, "What is this data going to be used for?" In addition to simply revealing where the holes are relative to actual people, this becomes an integral part of the market analysis process within each region of each state.

But it does not really stop there. The engineers within each region would like to use their partitioned copy of this distributed tool as a base to plan from. The potential fiber routes, the potential tower locations, the RF coverage maps derived from the topographical

terrain maps can all be layers. By simplifying the process and making it useful enough to the engineers, you instigate a viral data collection process with precision and finesse that would have been very difficult for you to do with the traditional "Send some numbers to Washington" process.

What information will be useful? There will be two sets of data. The first will be that which you will think that you would like, and the second will be that data that you learn about as the engineers begin to tell you about as they go about planning their individual plots. As the collaboration continues, you will find all kinds of clever information that make construction and operation useful.

There is a technique you may be familiar with known as "Building Information Modeling." Although usually applied to the construction of skyscrapers, it works equally as well for the construction and operation of telecommunication networks. There are six different dimensions to the data collected that are invaluable at the period of market analysis, planning, pre-construction, construction, and operational phases. Once witnessed for the first time, the typical reaction from the person in charge is: "We have to have this right now!" We encourage you to witness this technique and form your own opinion.

As to the specific metrics, the following items come to mind based on the discussions above and below:

- Households and individuals
    - Address – suitable for geocoding
- Services actually used
    - Telephone - wired
    - Telephone – wireless
    - Cellular voice service
    - Mobile data
    - Television – cable
    - Television – satellite
    - Number of HD television sets in the location
    - Internet access
        - Type
        - Advertised bandwidth
        - Personal, commercial, or both?
    - Private broadband access (other than Internet)
        - Type
        - Advertised bandwidth by individual service
        - Fiber to the home triple play

- Machine to machine (M2M) telemetry access

Additional information is needed from the marketing and engineering groups of the network and service providers for homes passed, tower/POP locations, services offered and speeds delivered, and capacities for the middle mile. Much of this information will be confidential information considering the competitive landscape we are creating. So adequate confidentiality of proprietary data must be ensured.

In the very beginning, customer surveys are most important to understand within statistical accuracy what the public actually perceives as opposed as opposed to what the service providers advertise. Both views are true and are important to understand. The survey will allow qualitative information to be obtained that is not necessarily available from reviewing network numbers.

For further ideas on these matters, you should contact the Vermont Telecommunications Authority. Once again, you may find that good things sometimes come in small packages.

30. We seek comment on the interrelationship between the various reporting obligations the Commission is tasked with under the BDIA and the NTIA and RUS grant projects. How well do these varied reporting obligations mesh and what revisions might be appropriate? For example, as we consider how to measure progress in the United States, how should we consider the comparative analyses of international broadband required by the BDIA?[36]

Response: Pass

31. What can the Commission learn from the efforts of other countries as it develops a national broadband plan? Have other nations developed similar plans or other programs that assist them in measuring broadband deployment that could inform our development of a national broadband plan? How have other countries addressed various barriers to deployment, such as sparsely populated areas?

Response: We believe that the answers to all these questions are "Yes." However, we have not performed this market research ourselves. Our recommendation on this matter is to pick the top six you believe are deploying well and travel to those countries and interview them yourselves. In the collaborative environment that we now live in, just ask them directly to describe their plans and aspirations. The open ended interview will provide very interesting information beyond what preconceived questions can garner.

32. We recognize that accurate and comprehensive data plays a critical role in assuring the success of a national broadband plan. As such, we seek comment on how we can ensure that any and all data collected in furtherance of developing and implementing a national broadband plan can be as accurate as possible. We also seek comment on what types of necessary public and private sector data are not being collected, how we can obtain such data, and how we should use such data in furtherance of a national broadband plan. Further, we ask how the Commission should balance legitimate confidentiality interests in the data it collects against goals of accountability and openness, as well as allowing the public to measure and review progress.

Response: In terms of market intelligence, there will be inaccuracies, misrepresentations, and differences of opinion in all data you collect. But in interviewing the key stakeholders and cross referencing data collected from three or more independent sources, you can see the pattern using the analog processes of the mind.

Data needs to be collected more than once. In the market analysis stage, you need information to determine what to do and what strategy to use. But as you approach the moment of commitment in each unit of construction, the financial backers will want specific data regarding commitment level forecasts. This may seem like the same data to the casual observer, but in practice these analyses are quite different in purpose, in process, and the way the data is collected.

33. We seek comment on whether the Commission should, as a part of its national broadband plan, seek to collect additional data from broadband providers, consumers, health care providers, schools, libraries or other governmental organizations. If so, what specific additional data would be needed to provide a more comprehensive measurement of progress? We seek comment on how to factor in the broadband metrics stud by the Government Accountability Office (GAO) that is scheduled to be submitted to Congress by October 10, 2009.[37] Additional, we seek comment on whether statistics relevant to this inquiry are collected by other governmental or non-governmental entities. For example, are there appropriate quantifiable measures for the utilization of broadband in various aspects of American lives, such as home life, work, innovation, education, telecommuting, medical care, public safety and first response?

Response: Much has already been made of the information desired from broadband providers and consumers in this day and age of non-regulated, opt-in data gathering. Health care providers, schools, and libraries all have organizations that can provide information and statistics on broadband access. Rather than mount a separate data collection effort, a more efficient method might be to interview these already existing data collection methods to determine their process and quality techniques to ascertain their level of accuracy and dependability. Each is limited by the resources at their disposal but each will have a passion for reflecting the accurate state of affairs in their own arenas. By supporting these already existing efforts and beefing them up to the desired level of precision, many parts of the overall team will benefit from these activities. Each of these areas, including other governmental organizations should be analyzed as if it were a commercial enterprise as the nature of the services desired is just as varied as anywhere else. (All enterprises are "different".)

The measures as will be amplified in later items fall roughly into two categories:

- Matters of transmission
- Matters of adoption

Much has been made of the measures of transmission already. But the missing part of the conversation must start back with the Original Intent. In order for the benefits of all this new broadband capability to be realized, it must actually be used for something. One theory going around now is that if we build it, they will come. This is reminiscent of the thinking that caused the telecom bubble burst in the late 90's. The problem then and now is that we must expand the number of people who are comfortable in using the new connectedness. And to do this, we need to do two things: we must continually generate new uses, and we must show people how to use the new capabilities.

In order to make progress on the adoption process, we must come to an understanding of why people don't just spontaneously start using the new capabilities just like breathing air. And the answer is of course that the adoption cycle is a social phenomenon based on human needs. Madison Avenue would have you believe that all can be understood by a

study of Abraham Maslow's hierarchy of human needs and applying some five different forays to capture 100% of the market. Who knows? They might be right. So to break this down scientifically, the market must first be broken down into its psychographic segments and measures applied differently based on each segment. And then a strategy needs to be applied for each different segment according to the human needs most prominent in that segment. The initial goal is to get the uninitiated to use the broadband service at all. With even a little bit of use, literacy is achieved, and then the learner-directed mechanisms can kick in.

So we return to the fundamental problem. How do we address the issues of initial awareness and fear of the unknown. Generally it is a social process that causes awareness and attraction to something new. It is the trust and camaraderie of enjoying something with friends that most quickly provides the spark of expansion. Man is by nature a social animal. This is the way it has always been done.

So if we are collecting quantifiable measures on something, we must first have in mind what the process is, and then only collect those measures that have meaning relative to the process. An infinite amount of data can be collected, and if we are paid by the hour for data collection, seeking an infinite amount of information on any subject would be a great thing. But if we are being efficient about what we are doing, there is generally a single data point that could best capture the state of things relative to each activity of the process we are measuring and then optimizing. So let us first clarify in our minds what we are trying to achieve and what our process will be. Then the metrics become much easier and more relevant.

Recapping, some measurements need to be made concerning transmission availability, and some measurements need to be made about adoption. In terms of adoption, what is our strategy for adoption based on the latest thinking by those who are the masters in the art?

[We realize this Item #33 was meant to be one of organizational gymnastics relative to interagency procedural matters, but indulge us a bit more as we proceed to analyze the real matter at hand.]

Incidentally, who is it that has not already adopted the Internet in their daily lives? It is probably the very young (say 4 years old), the very old (say 80 years old), or those who are unfortunate enough to not have friends or a support system that can ease them through the scary moments of learning something new. The Internet itself is a very self contained teaching tool, but if you don't have access to it, or you have never used it before, it can't help you. No, what you need is a Home Depot that you can go down to find out how to do things when you have a yen to do something new in a fun way. Especially if you don't have a clue as to what you are doing. You need to friendly person who is wearing the orange apron to accost you when you walk in to help you find something or show you exactly how to make something. Someone whose day you will have made if he can pass on to you the secrets of success in some little something or other. Oh, he will load you up with things to buy, but like the Macy's Kris Kringle, he will tell you what to avoid or where else to go to get a better deal. Why would you start anywhere else?

If only we had such a place to go where real flesh and blood would always be there to show you how to do things or to get you out of a jam when something stops working. A place where you are in charge because it's your idea and you have the itch to spin it up to something you can show off to all your friends, or to your associates, or to your customers, or the like.

Once launched with a support system that won't quit, one could actually see making a party out of the fun aspects of the process from time to time. But the term "party" means something slightly different if you are six years old, if you are a teenager, if you are a young adult, if you are a parent, if you are a business person, or if you are a boomer or beyond. But establishing a "place" where there are community resources that can be used to let these events occur… that seems to be pretty important if we are to get on with things quickly.

So let's go back and reexamine your list:

- home life
- work
- innovation
- education
- telecommuting
- medical care
- public safety
- first response

Where do we kick start the process of adoption? Where do we find the Home Depot that all age groups can get hooked on the new medium and launch new ideas by themselves or more likely with their team mates? If we had to pick the most likely place where we could get this new support structure going to spawn the vision and the ecosystem itself, we need to select the place of least resistance. For lack of any better place, maybe we could use the community library as a starting point… it's really not used for anything else these days. Maybe some place else, but for the moment, let's say it's the library.

Maybe a new wing or downstairs. We really don't want to disturb the cherished dusty old institution that has become the warehouse where we store all the old books that basically nobody wants to read anymore. Why should anyone want to use a library anymore? Everything useful you can now find with Google on the Internet. Well, that is… if you know how to use the Internet and have access to it. Maybe we can breathe some life into the old building yet. That's entrepreneurial, don't you think?

So we beef up the old girl with some spiffy new capability. We formally declare it to be the place where the community repository of digital media resides. Since it's only one place, we pull out the stops and provide red hot Internet access to the building, the likes of which are not really commonplace anywhere else in the world. We select a few well chosen merchants of media and knowledge to set up shop in the new wing. We provide the access to computers for those who don't already have them… to use them free of charge at the library… or to check them out and take them home like books… or to buy them now that you know how to use them… but always attached to the orange aprons back at the clubhouse who can show you how to do anything. Yep,

anything. Because if the particular orange apron doesn't know the answer, the two of you can step back to one of the videoconference "pod" rooms and do the search for the expert orange apron somewhere else to get the guidance and the low down on what to do. (This is the way Citibank does it right now for their best customers.)

Oh, and let's put some real engines of commerce that you could never afford to buy for yourself right into the library, too. Maybe we can talk Kinko's into setting up shop back in the back for production use or connection to their gigantic facilities for staggering jobs that can be commandeered from the comfort of the smallest hamlet in the country if need be.

Or perhaps we can set up the support of the local community health center for recertifications, practitioner access, or patient awareness programs that really work if our intentions are to really have healthier people.

Or the police department lieutenant and the mayor going down together to get up to speed on how the new emergency notification system really works and how to set it up so that everybody in the chain from the first responders, to the firemen, to the cops, to the medical center interact during the basic call out sequences. How the CAP notifications are going to be authenticated and authorized, and what the subsequent rollout notifications are going to be. It's really the only place where you can set up all these environments side by side to get the drill straight before dispersing back to the day to day grind.

Or perhaps we can arrange the national multiplayer competition bakeoffs to determine who really is the champion in all the country of the Civilization or SimCity skill sets. These terribly addicting time-wasting simulation pastimes of the young… that tend to generate the skills and working relationships that make them into the wizards who seem to be the only group capable of supporting their parents and teachers in terms of new technologies of all dimensions. (It's really kind of embarrassing, isn't it?)

Or perhaps Expedia.com or Intuit will call us desperate to use our new little reinvention down at the library because their business depends on the cottage industries for travel agents, accountants, and similar white collar work that works well distributed into the hinterlands. And there problem is that they need a home base like the library that the workers can gather at least once every two weeks to socialize and to discuss the latest situations to get the kinks worked out in ways that only rubbing elbows can do.

Add a few gardens for the required Peripatos walk and of course a Starbucks for some comfortable quiet contemplation and we should be all set.

So if our strategy is to use a 2300 year old concept to launch the greater adoption of the broadband use here in the United States, and we are adopting the tactic of reinventing the library as one of our time-tested ways of expanding human know how, we should architect the process, and then choose the metrics to see how we are doing. We should make sure that we cover useful techniques that affect all people regardless of where they currently find themselves on the Maslow hierarchy of human needs. We should select the metrics accordingly, and then set in place a mechanism for optimization so that the metrics themselves will be useful for achieving the goals as opposed to just showing where the goals were missed. (There is a difference.)

The concept described in this Item #33 comes from the National Library Technology Program. More will be made of all this as we proceed to your later items that specifically focus on specific aspects of this subject.

34. The Government Performance and Results Act[38] requires Federal agencies to develop performance measures for major functions and operations. Guidance issued b the Office of Management and Budget (OMB)[39] to implement the Recovery Act states that program plans

must include measures of quantifiable outcomes supported b corresponding quantifiable output measures. According to OMB, outcomes describe the intended eternal results of carrying out a program for its intended beneficiaries and/or the public. Also, according to OMB, outputs are an internal measure of the level of program activity that will be provided over a period of time.[40] Similarly, the GAO has addressed performance planning and practices.[41] It recommends that agency plans articulate a results orientation by creating performance measures that address important dimensions of a program. Again, in its report on the outcome-based Universal Service Funds High-Cost Program, [42] GAO emphasized that performance goals and measures will help illustrate to what extent, if the programs structure is fulfilling the guiding principles set forth by the Congress."[43] We seek comment on quantifiable outcome measures and corresponding output measures that would be useful in assessing progress toward the goals of a national broadband plan. We also seek comment on how progress can be measured relative to progress that would have occurred in the absence of any program to better understand the impact of the program.

Response: The language of the statutes leaves enormous room for flexibility for original solutions to general problems. The first measure is to determine whether in a geographic area all of the subject areas have been addressed at all. If there is a subject area that has not been addressed, then the progress has not been made in that area. It would seem that each statewide effort where demand has been aggregated should address pretty much every area mentioned in the list of desired areas, or have a really good reason why that area has been left oft.

Support for a high value area or other stated goal should either be directly addressed, or indirectly addressed by bundling in companion projects that are interdependent that cover any missing areas. For instance, some projects by their nature must remain national in scope, but be implemented in the various states. Some of these national projects are vertical in nature and support the adoption goals, computing power, library access across state lines, medical networks that are blind to political jurisdictions, and the like. Programs that implement national backbone, statewide distribution, or local access are each important for providing transmission, but the programs that are focused on adoption, training, and similar goals are necessary to provide the complete coverage required. So each state must be able to show coverage in all required matters concerning transmission coverage as well as the required vertical programs… either directly of by reference to collaborating programs operating in that state.

Once coverage is established for all the required subject areas, there must be an examination of the goals of each program relative to the Original Intent or any other subordinate aspect of the statutes. A judgment must be made as to whether the goals of the programs are compatible with the latitude of the language of the statutes and Original Intent. If the goals are compatible, and all the areas are covered in a statewide or regional strategy, then we have passed the first hurdle.

Measurements against goals should be at a sufficiently high level that they indicate a general direction and a measurable metric, such as x % of the residents having access to the 100 MB Internet at their homes or offices by 2012. Or x % of residents having access to cellular coverage along y miles of heavily traveled roads by 2012. Or x % of people have access to 1 GB Internet access at their libraries, schools, and medical facilities by 2012.

There are other measurements that are more tactical in nature, but they are highly dependent on the tactics and programs proposed to meet the strategic goals surrounding the Original Intent. These tactical and programmatic measurements will be different than those deemed strategic and that are the subject of this item.

4. Role of Market Analysis

35. In addition to the particular inquiries outlined in the Recovery Act, should the Commission, in formulating its broadband plan, undertake a traditional market analysis with respect to any relevant market related to broadband? What are the relevant markets? Do they extend beyond broadband service provider markets to encompass backbone networks, equipment markets, applications markets or others? Within each relevant market, who are the providers, potential providers and customers? What is the appropriate geographic area for examining any relevant market? Where is competitive supply adequate? Where is demand adequate or not? What are the barriers to entry in any particular relevant market? We seek comment on these and other questions related to broadband markets that commenter's think the Commission should examine in developing a plan to ensure that all Americans have access to broadband capability.

Response: Having multiple market analyses going on concurrently within the same areas serves no real purpose. Participating in the market analyses that are the subject of the mapping exercises and the business planning of the respective programs that are the subject of the ARRA programs makes a lot of sense. Funding the market analyses that must occur prior to submission of grant proposals makes the most sense of all. The flaw in many of the grant programs to date is that they all assume the "someone" has funded these market analyses before making a grant application. In calmly reviewing the process and procedure, this oversight will be shown to be one of the major impediments to the entire broadband program here in America. If the FCC can fund these analyses, then a major step has just been made in the broadband program here in America.

All of the items you suggest in the Item # 35 are important. Our recommendation is that the FCC indeed funds these market analyses efforts, but in exchange for funding them require that the results be submitted for the FCC's use also. And the results submitted need to be in a form compatible for use in the distributed mapping program as described above in Item # 29 above. This will make the results available to all collaborating parties.

C. Effective and Efficient Mechanism for Ensuring Access

36. In the development of a national broadband plan, the Commission is charged by the Recovery Act with including analysis of the most effective and efficient mechanisms for ensuring broadband access by all people of the United States.[44] We seek comment generally on how effective and efficient existing mechanisms have been, whether they are marketplace mechanisms, or activities of governmental or non-governmental entities that supplement or complement the market mechanisms. What mechanisms currently exist at the federal, tribal, state, and local levels, whether implemented by broadband providers or by governmental or non-governmental entities? We also seek comment on how the additional mechanisms being implemented pursuant to the Recovery Act, particularly the grant programs at NTIA and the rural broadband programs at the RUS should inform our analysis and development of a national broadband plan. Similarly, we seek comment on the extent to which programs that provide training and assistance to potential users of broadband are effective and how such programs might fit into the national broadband plan.[45] Are there additional mechanisms, or changes to existing mechanisms, that the Commission should consider? Further, we seek comment on the extent to

which existing mechanisms adequately serve the goals of the Recovery Act and can meet the needs of all communities and people across the nation, including people with disabilities as well as people in urban, rural, insular, Native American and economically distressed communities.

Response: In answering this question about the effectiveness and efficiency of current programs, we understand this to be a qualitative question inviting constructive criticism with the intent of progressing toward the Original Intent in smooth professional fashion.

The generic approaches and rules used to date by the RUS and indeed the FCC are meant to protect the current programs from individual criticism as opposed to providing global competitiveness. Many interpretations of rules have similarly operated to the detriment of both effectiveness and efficiency. But then you already know this otherwise you would not have invited the question.

Each time a broadband network is to be planned, the required information requested by most existing programs needs to be compiled specifically for the compliance with the government portion of the program instructions, but then separately the real business plan must be constructed. Normally the real business plan must be constructed in advance of any application for grant or loan. These plans must be designed to be dynamic documents that are intended to guide the operation of the business. A business that has new surprises and events weekly that must be managed to regular success in spite of obstacles. The plans prepared for loan programs tend to be needed for some comfort that the loan will be paid back. There is an extreme difference in the two different reporting systems. And the difference is vast. What is needed is a more dynamic process whereby the two efforts operate in more complementary fashion.

The mechanisms for providing broadband tend to be performed either by existing service providers or public/private partnerships, mostly on a local level. Occasionally the governance occurs at a state or tribal level, but most efforts to date have had a local emphasis. It is an odd thing to say, but actually more government support for those elements that are traditionally ignored would be very helpful.

To make rapid progress, funding programs that are easy to understand and easy to access need to support the market analyses described in the previous item. Then financial support is needed in the same fashion to support the technical aspects of conceptual design to describe an optimal solution relative to the findings of the market analyses. Actual practitioners tend to make these designs happen faster and more efficiently than most naïve efforts. In conjunction with the conceptual design, a full business plan must be produced with the intent that the plan is to be used to decide whether to go forward with the matter. Once this decision has been reached, a second level engineering design must be performed to create RFPs and other systems of quotations so that costs are generally known. Unfortunately, it is only at this point in the process that interaction with the government begins. If we are in a hurry, this is a sad fact. The typical broadband program operating with no general strategy or funding tends to take about five years before being able to contact the government appropriately. This is a needless built in delay that is endured here in America.

As to the ARRA relationship of the FCC to the NTIA and RUS, the NTIA and RUS should of course provide all information they have as input to the data gathering process. But one of the best sources of information will come from those practitioners that are

applying for grants. The information coming from the proposals themselves will transcend far more ideas useful for the national strategy beyond just that of transmission plans. Also, the national strategy cannot be a static item, but it needs to be updated and republished each year as new facts come to light.

An excellent example of proposals that you will receive are ones like the National Library Technology Program that are intended to sponsor massive training and assistance programs. The style and scope of programs such as these and the private industry that supports them seem to be integral to the strategy for many matters facing the United States today.

We describe separately in this response how programs such as these squarely address those with disabilities, how they are supported by Native American communities, territorial interests in the Caribbean and elsewhere, in rural environments, in economically distressed communities, and yes, also in urban areas. Each customized by those who live there to be their own solutions.

1. Market Mechanism

37. Market mechanisms have been successful in ensuring access to broadband in many areas of the country. What is the best way to attract risk capital to broadband infrastructure projects? We also seek comment on the role of regulation in broadband infrastructure and service markets, as well as its efficacy and efficiency in achieving the important policy objectives contemplated by Congress in its directive to establish a national broadband plan. Where have market-based policies been unsuccessful in ensuring access, and why? For example, what lessons can be learned with regard to whether market forces alone can deliver broadband to rural areas, or areas such as man tribal lands, where marketplace forces alone have not yet delivered even older technologies, such as telephone service? Further, we seek comment on the extent to which our plan can, and should, encourage the combination of market-based policies with other mechanisms to achieve the goals of the Recovery Act. How can any such combinations be implemented effectively and efficiently? For instance, what factors should we consider as we evaluate how government funds for broadband development are distributed, in light of the markets current patchwork of broadband build-out? Is there a way to distinguish between those areas that would receive service without government funding and those that would not? What have been the results of consolidation in some parts of the telecommunications industry with regard to broadband deployment? What is the role of spectrum policy, tax incentives, and other initiatives in promoting market-based delivery of the goals of a national broadband plan?

Response: The only way to attract risk capital to broadband infrastructure projects is through the private sector. Only earnings drive the capital markets. Therefore, public private partnerships are invaluable in this regard. Also, just as NASA had to create a whole new ecosystem to put a man on the moon and to build the space shuttle, the new broadband environment will similarly need its own equivalent. The visioning process for expanding and developing this ecosystem needs to occur just like the NASA process which requires weekly iterations to be successful. The members of this emerging ecosystem will primarily be private sector companies. As concepts and efficiencies emerge in the visioning process and by the members of this new support system, private risk capital can flow. At least one clearinghouse concept (the MetroCore) comes to mind among many other groups.

Regulation of the broadband markets does not come to mind as useful. Incentives, yes. Regulation no.

Market-based policies are focused on the easiest and fastest way to make profits. This generally means focusing on markets with higher densities. But this is not a new revelation. However, in analogous fashion, almost no one can deny that the Eisenhower Interstate Highway System has made the country more secure and more prosperous than the patchwork of toll roads and limited capacity federal and state roads that existed before the Interstate System. Also in analogous fashion, there has been no need for the federal government to sponsor all the trucks and other commercial vehicles that operate on the Interstate System.

The lessons to be learned by this example are that there needs to be a master strategy that projects capacities and major connection points. Also for feeder rings and spurs. Without this overall plan, the capacity we enjoy today would not exist. Parenthetically it should be observed that the individual states have the major role in constructing the Interstate System, but they must use "design patterns" to govern the logarithmic gracefulness of the curves, the spanning of vast uninhabited areas to conveniently link both major and minor urban areas, the size and distance amenities of the road signs, the rest areas and the landscaping guidelines, and the like. This is why it feels like a single system and can be used with a low feeling of apprehension by drivers venturing into a new area for the first time.

We need a similar process for the expansion of the big broadband pipes. Market forces would never have built the Interstate System.

We know of no rural areas and certainly no tribal lands where market forces alone are expanding the broadband capacity the way the Interstate System expanded. Many Native American lands have very little access to even telephone systems given the strange way they are excluded by state activities.

In response to your questions on distribution of funds, one might consider the following strategy touched on earlier:

- Conceive the entire strategy from the outside in. Never design a thing without thoroughly considering its next larger context. Establish a vision for how the United States fits into the rest of the world, then determine in simple strokes how the national backbone might be laid out. Consider having triple redundancy because of the consequence of failure and allowing for normal maintenance activities.
- Conceive the layout of the middle mile in collaboration with each of the various states and territories. Forecast the capacities required for the middle mile given the Original Intent as opposed to a high school science experiment. Understand that regardless of how well you plan the middle miles, you will be a little bit wrong. And this has to be okay. For regardless of how correctly you fashion the current vision, technology and world requirements will relentlessly move relentlessly on. So there will always be an "as is" version of the plan operating in parallel with the "to be" version of the plan. As the "to be" version of the plan becomes realized, the resources used for the old system now become available for the new "to be" plan, and so on. With a little ingenuity, the evolution will be less disruptive.

- Use the principles of "design patterns" to support local options for the last mile. But employ the people who live in the local environments to design the local access portions. The community engagement will allow a "sense of place" to emerge in ways that you will never be able to centrally plan.
- In parallel to the strategy for the fundamental transmission complex, conduct the visioning process for continuously inventing the support ecosystem needed for the emerging broadband capability. This includes the training aspects, the technical support specialties, the equipment, facility, and material specialties and logistics support. Determine how to nourish the ecosystem so that it will be there in sufficient quantities to ensure the construction and operation of the new capability expands predictably.

This process worked for NASA and it can work for you. It is primarily a matter of vision skill.

In looking for areas that would receive service without government funding vs. those that would not have, the process is relatively simple. Just look for those areas that already provide 100 MB Internet to people's homes and offices. You can exclude these areas (and there are some). Then consider the fact that all other areas will be in need of government support, otherwise they would already have this level of support. The consolidation of the telecommunications industry virtually guarantees this phenomenon.

Spectrum policy allows for an ensurance of competition. Tax incentives will greatly encourage retail service providers to expand. Outright grants and tax incentives will encourage critical expansion of the ecosystem support organizations here just as they do in Ireland and other locals.

2. Determining Costs

38. In order to capably develop a national broadband plan, how useful or necessary is it for the Commission to understand the costs of deploring broadband networks to the unserved and underserved areas of our country?[46] Should the national broadband plan seek to bring broadband to 100 percent of the country? If so, what are the costs and benefits of bringing broadband to the least densely populated areas? We seek comment on how we can better estimate the cost of deploring various alternative broadband technologies to those areas that the market is not serving, or not adequately serving. Which broadband technologies might work best and deliver the most effective, efficient services in various parts of the nation? For this task, are cost models a viable tool, or are there other appropriate w a s for estimating deployment costs? If cost models are appropriate tools, how should the Commission develop or otherwise obtain them?[47] Can these methods be verified in some objective, dependable manner?

Response: Costs are one of the seven critical dimensions of what you are about to explore. Both costs to deploy and more importantly the costs to operate. The other dimensions are the following:

- Performance
- Availability
- Flexibility

- Service functions
- Adoption

We are confused about the question of whether the national broadband plan should seek to bring broadband to 100 percent of the country. Referring to the overriding Original Intent, the answer is obvious.

Further, broadband is already available to all areas of the United States in the least densely populated areas. The problem is that it is satellite-based service in some cases. And not all services will be available over satellite transmission.

So your real questions ultimately resolve down to how to plan for the deployment of optical fiber to all locals in sufficient quantities to deliver the onrush of new services.

Breaking free of the confining patterns of the past and focusing on coming up with a practical answer to the question, the teamwork model suggested by the New America Foundation seems like a pretty good starting point. It provides a strategy for relentlessly deploying adequate fiber to the hinterlands.

The next step of the strategy once the solution to the first set of big costs is taken care of is to focus on the problem of costs of the optical transmission elements. Relentless R&D used to lower the cost of production of 48 mile laser technology is needed. These steps must be followed by a maturation of the new Metropolitan Ethernet Forum standards and supporting equipment. Other smaller steps will help, but these seem to be the critical success factors towards realizing the vision of ubiquitous broadband in all its glory.

3. Universal Service Program

39. We seek comment on the impact of broadband on our existing universal service programs, and how we should conduct our analysis of the High-Cost, Schools and Libraries, Rural Health Care (including the Rural Health Care Pilot program), and Low-Income programs. Specifically, for each program, we seek comment on the programs effectiveness and efficiency as a mechanism to help achieve national broadband goals.[48] Further, we seek comment on what modifications to these programs, if any should be considered as a part of a national broadband plan. We seek comment on how these programs might be better targeted to address broadband deployment, particularly because these programs treat the support of broadband differently. Although the High-Cost program does not explicitly support the provision of broadband, as do the Schools and Libraries and Rural Health Care programs, a carrier providing broadband services indirectly receives the benefits of high-cost universal service support when its network provides both the supported voice services and broadband services.[49] While the Low-Income programs do not currently support broadband, the Commission recently sought comment on a pilot project designed to make broadband affordable to low-income consumers.[50]

Response: The Universal Service Program should be modified to support telephone and broadband services. The program should be expanded to draw from the expanding cellular sources in addition to the diminishing wireline sources.

40. In particular, we seek comment on the impact of broadband stimulus funds on the Commission's broader efforts to reform the distribution of high-cost support and the collection of universal service contributions. To the extent that financial support is necessary to ensure that adequate broadband is available in high-cost deployment areas, including those currently

unserved or underserved, how do we most effectively address this need? Are there opportunities to leverage the stimulus program funds and universal service funds to maximize broadband deployment, and at the same time prevent double dipping"? To what extent will broadband deployment require continued funding for operations and maintenance?

Response: Broadband deployments are businesses similar to all other businesses. If we are funding broadband service to expand them, there is the matter of financing the working capital needs up through the point of break-even whereby the revenues of the enterprise will sustain the operations. This is an elementary principle understood in all other industries but somehow not part of the American broadband strategy. The simple answer to this dilemma is to address this item squarely and with aplomb in the new national broadband strategy.

41. Should we modify existing universal service programs? For example, should we make broadband a "supported service" eligible to receive support directly from the High-Cost and Low-Income programs? Should we create new programs specifically to provide broadband support? Should such programs be designed around the deliver of broadband? What policies or mechanism do we use to prioritize funding in an efficient manner? For instance, should unserved areas get priority? Should multiple providers in an area get support? Should we give priority to funding the construction of networks, or is ongoing support for operations and maintenance essential? If we create new programs, should these programs replace the existing programs or supplement them? If broadband services become eligible to receive high-cost and low-income support, should we also require contributions to universal service from broadband providers? What effect would such a requirement have on the economics of broadband deployment? What effect would including broadband as a supported service have on the size of the universal service fund, and on contribution requirements?

Response: Broadband should be made a supported service.

Unserved areas should get priority for access service. However, without middle mile support, the access is crippled. So, the middle mile deployments should be prioritized for reaching the maximum number of Americans according to the master coverage plan. A local optimization to reach certain unserved Americans to the detriment of other unserved Americans is a foolish consistency design to exaggerate costs and suboptimize the reach to all Americans. Please do not get trapped into double talk that is unrelated to the Original Intent.

4. Wireless Service Policies

42. In the *Wireless Terrestrial Rural Report and Order*, the Commission concluded that steps were needed to promote greater deployment of wireless services, including steps to eliminate disincentives to serve or invest in rural areas, and to help reduce the costs of market entry, network deployment and continuing operations.[51] Therefore, the Commission adopted measures designed to increase carrier flexibility, reduce regulatory costs of providing service to rural areas, and promote access to both spectrum and capital resources for entities seeking to provide or improve wireless services in rural areas. Should the Commission employ other mechanisms to encourage wireless broadband deployment in rural and tribal areas? For example, have bidding credits for carriers proposing to serve tribal lands been successful in encouraging deployment of wireless services, including broadband, to Indian Country?

Response: Yes. Unknown.

43. We also seek comment on how different regulator approaches that the Commission has adopted in the past, such as facilitating more efficient spectrum use, developing licensing rules and construction requirements, designating spectrum for licensed versus license-exempt use, secondary markets, cognitive radio, or other polices can ensure efficient and effective access to broadband.[52] For example, what about the adoption of more rigorous build out obligations for wireless services, such as were recently adopted b the Commission with regard to the 700 MHz band?[53] How effective will these policies be with regard to ensuring deliver of broadband services in rural areas, or how ma the discourage investment? More importantly, how can the Commission ensure that any measures to encourage wireless broadband service coincide with and complement other broadband platforms (and vice versa)?

We seek comment on the extent to which access to spectrum may pose a constraint on broadband access and development. We also seek suggestions for approaches toward spectrum allocation, assignment, management, and use that will best promote national access to broadband service. Spectrum. For example, should the Commission conduct a "spectrum census" or "spectrum inventory" to identify spectrum bands that may be suitable for wireless broadband services?[54] If so, which portions of the spectrum would be most appropriate for examination? There are a variety of was in which the Commission might conduct a "spectrum census" or "spectrum inventory", including review of spectrum allocations, licenses, spectrum monitoring, and user surveys. What approaches would be most effective in assessing the actual use of existing spectrum and gauging potential opportunities for wireless use" broadband services? How should we measure "use" of spectrum, accounting for different technical properties, licensing framework, and the like, in determining whether spectrum is being full utilized? In underutilized conducting such a census or inventory, how should "underutilized spectrum" be defined and what actions should be taken if the spectrum is underutilized? Would such a census or inventor, especial if conducted along with a similar census or inventor b the National Telecommunications and Information Administration of Federal Government spectrum use, be helpful in implementing a more efficient use of spectrum or locating spectrum used for other purposes that could be reallocated and made available to meet growing demand for broadband communications and data services? More broadly, in developing a national broadband plan, we seek comment on how the Commissions joint spectrum policy responsibilities with NTIA should inform this plan.[55] To what extent can new technologies such as cognitive radio enable more efficient use of existing spectrum allocations or create new opportunities for sharing spectrum with existing services?

Response: Pass.

45. The Commission has recently adopted the *White Spaces Order*, which opens up the use of significant spectrum in the core TV spectrum bands for use by unlicensed devices.[56] Man see these rules as creating an important new mechanism that can help ensure broadband services become available for more Americans. Given the importance to wireless broadband services of backhaul to the PSTN and the Internet, how can this spectrum be maximized to provide point-to-point backhaul in rural areas?[57] Several other bands are currently used by WISPs to provide broadband through the use of unlicensed devices.[58] What more should the Commission do with respect to permitting the use of unlicensed subscribership" devices? How should the Commission measure "subscribership" or use of devices utilizing unlicensed spectrum? What more should the Commission do to promote the development of cognitive radio devices in order to ensure more availability of spectrum for broadband uses?[59] To what extent should unlicensed wireless play a role in a national broadband plan?

The Commission has fostered opportunities for new satellite services capable of delivering broadband from satellite-based platforms. In implementing the Broadcasting-Satellite Service in the 17/24 GHz band, the Commission has created the potential for a new generation of broadband services to the public, providing a mi of local and domestic video, audio, data, video-on-demand

and multi-media services to U.S. consumers.[60] Satellite operators have also been authorized to maximize spectrum utilization through the provision of ancillary terrestrial component services, including wireless broadband. Moreover, the Commission continues to license satellite-based broadband services for consumers in aeronautical, land-mobile and maritime environments.[61] The Commission has also streamlined non-routine earth station processing rules, which has facilitated access to terrestrial communications facilities by satellite-based broadband service providers.[62] Given the ubiquitous coverage capabilities of satellites, we seek comment on what further actions the Commission can take to promote the use of satellite-based platforms for access to broadband, especial in rural and remote communities.

Response: Pass.

5. Open Networks

47. We seek comment on the value of open networks as an effective and efficient mechanism for ensuring broadband access for all Americans, and specifically on how the term ”open” should be defined. For example, should it incorporate access, interconnection, nondiscrimination, or infrastructure sharing principles? The Commission, through its *Computer Inquiry* proceedings, developed specific nondiscrimination requirements for facilities-based telecommunications carriers,[63] although several of these obligations have been scaled back by the courts and by the Commissions revised regulator framework for wireline broadband Internet access services and other deregulator measures.[64] However, as the regulator framework for broadband Internet access services changed, the Commission has taken steps to clarify the importance of open networks.[65] For instance, the Commission published its *Internet Policy Statement* establishing four principles “to ensure that broadband networks are widely deployed, open, affordable, and accessible to all consumers.”[66] More recently, the Commission clarified its authority to enforce those principles and has initiated a proceeding to review broadband industry practices generall.[67] In addition, as discussed below, the Commission adopted a requirement for licensees in the 700 MHz Upper C Block to provide an open platform for devices and applications, subject to certain conditions in the 700 MHz auction.[68] We also note that the Recovery Act requires the Commission to coordinate with NTIA on the publication of “non-discrimination and interconnection obligations” that will apply to grants received from NTIA “including, at a minimum, adherence to the principles contained in the Commission’s *[Internet Policy Statement]*.”[69]

Response: Open networks are the secret of expansion of services to rural areas.

48. We seek comment on the state of broadband infrastructure and service competition, interconnection, nondiscrimination, and openness, and whether these should factor into development of a national broadband plan. We ask commenter’s to address the value of open networks, and specifically, the impact on investment, innovation and entrepreneurship, content, competition and affordability of broadband, among other things. For instance, has the private sector sufficiently produced open platforms, and if so, to what extent? Would further regulation encourage or discourage more open platform innovation? We seek comment on how and whether open network principles should be incorporated into a national broadband plan. We note that some have suggested the need for a so-called “fifth principle” on nondiscrimination.[70] If the Commission were to adopt such a principle, what would be a definition of nondiscrimination”? We ask commenter’s to address whether such a principle is necessary in light of the current state of competition and the four existing Internet policy principles. What would be the impact of adopting a principle requiring nondiscrimination? What would be the result if the Commission chose not to adopt such a principle, or if its *Internet Policy Statement* principles were found to be unenforceable? Should the underling facilities over which service is provided have an impact on how open network policy should be applied to broadband providers? With regard to applying open network policies to wireless networks, what are the costs and benefits, technical

considerations, bandwidth constraints, or constraints associated with the capacity of mobile wireless devices or networks that should be given consideration?[71]

Response: Fiber-based networks should be based on wholesale offerings to be deemed open access. Wireless networks should be based on similar principles but perhaps tuned to the definition of mobile virtual network enablers given the mobile dimension to the services.

6. Competition

49. We seek comment on the extent to which competition between various broadband network providers, application and service providers, and content providers should be evaluated as an effective and efficient mechanism to achieve the goals of the Recovery Act.[72] We seek comment on whether multiple providers of broadband services are useful or necessary for achieving our goal of providing broadband services to unserved and underserved areas. While competition between multiple providers may lower prices and provide a greater diversity of services, how does subsidizing more than one provider in areas with low population density affect the ability of the providers to achieve optimal economies of scale and to continue to operate effectively? Does it make a difference if the providers utilize different technological broadband platforms? How should we evaluate the potentially increased costs of supporting multiple providers relative to any benefits to consumer welfare from competition? We also seek comment on how we should define sufficient competition as we evaluate competition as a potentially effective and efficient mechanism for broadband deployment. Are there any other factors that we should consider in determining if a service provider should be counted as a competitor? Further we seek comment on additional metrics to assess the effects of competition in the provision of broadband services.

Response: If you subsidize a broadband provider that only offers a single service, have you actually enabled "broadband" in the spirit of the Original Intent? No, not really. You need to be subsidizing layer 4 transmission path wholesale services that can be used for many different retail services.

You need about three different competing retail services to really be sponsoring choice.

7. Other Mechanism

50. Are there other policies or programs that the Commission should review as a part of its analysis of effective and efficient mechanisms to achieve the goals of the Recovery Act? For instance, there are numerous proceedings impacting competition among broadband providers of all types in which parties advocate that certain changes will help to expedite the deployment of broadband facilities and services.[73] More generally, to what extent do tower sitting, pole attachments, backhaul costs, cable franchising and rights of way issues, as well as others, stand as impediments to further broadband deployments where such deployments would be made by market participants in the absence of any government-funded programs? We also note that the development of equipment and protocol standards is a key element in broadband deployment and seek comment on the appropriate role of the Commission in facilitating the development of such standards. We seek comment on how this variety of proceedings and policies could or should be evaluated by the Commission as a part of its development of a national broadband plan. We also ask whether there are requirements or policies contained in any current federal, state, or local broadband grant or loan programs that act as strong incentives or disincentives for the deployment of broadband.

Response: Pass.

51. Finally, we seek comment on any national broadband policies or programs adopted other nations or international organizations that ma be useful to the Commission in this proceeding. We seek information on specific plans or other initiatives designed to enhance broadband development in other countries and the appropriateness of introducing the same or similar plans here. These may include: consumer outreach, such as education designed for underserved communities, and the promotion of consumer access to service pricing and capacity information; subsidy programs, especial information on how projects are identified and prioritized and how funds are disbursed, (including such mechanisms as reverse auctions); competition policy, including reviews for dominance or significant market power; and other regulator actions, such as rules for licensing, unbundling, and open networks. We also are interested in hearing about how other countries have overcome any challenges. For instance, how have other countries accounted for any differences between actual and advertised speeds? What do other countries consider to be robust broadband speeds? How have the addressed challenges relating to geography, population density and dispersion, household size, GDP per capita, income distribution, education, population age, relative size of the country's largest cities, size of businesses, telephone penetration, consumer preferences, purchasing power parity, and any other potentially relevant factors? How have other countries determined the types of data to collect and the sources of that data *(e.g.,* consumer survey versus industry census), and how have the developed methodologies that ensure the reliability and accuracy of the data that the do collect? Finally, how does consumer satisfaction vary among countries?

Response: Pass.

D. Affordability it an Maximum Utilization

52. The Recovery Act requires that the Commission formulate detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public.[74] We seek comment generally on how to interpret this task, including how the goals of affordability and maximum utilization work together, or separately. As broadband becomes more affordable, will more consumers use broadband? Beyond affordability, what factors, such as digital literacy, affect consumer's choices regarding broadband? Are issues of privacy inhibiting consumer use and adoption of broadband technology? Also, as these various broadband platforms are deployed, what steps should the Commission take to ensure that delivery of services is competitive, and thus protects consumers and helps promote lower prices? Should the Commission revise its competitive review policies to take intermodal competition into account more or less?

Response: Affordability is important for the first 70% of the market. Beyond that, other factors begin to predominate. The term digital literacy also is wrapped up in the adoption cycle. The deployment of broadband will follow normal marketing adoption cycle percentages that are driven more by psychographic matters tied to self-perception of human needs. In this regard, broadband is no different than any other new concept. A true market analysis will analyze these forces in addition to function costs, and contractual dependencies and restrictions. Price is only one factor in the adoption cycle of any introduction.

53. We seek comment on how consumers and businesses are using broadband. Similarly, we seek comment on who is (and is not) using broadband children, immigrants, small businesses, seniors, persons of color, tribal communities, people with disabilities, people with low income, and others. We seek comment on how we would monitor or measure affordability and maximum utilization of infrastructure, and how we might address any problems, including changes or additions to regulator requirements that need to be made to better address affordability and maximum utilization? How could the Commission establish benchmarks or measure progress

toward this goal? Are there existing data sources the Commission could draw upon, or are there specific data the Commission should collect itself? In this regard, we seek comment on how we should incorporate the analysis and recommendations of the Government Accountability Office, which is tasked with developing a report analyzing additional metrics for broadband cost, capability, deployment, and penetration.[75] Further, we seek comment on an programs or policies adopted by other nations or international organizations aimed at achieving affordability for broadband services that ma be useful to the Commission in this proceeding.

Response: We have nothing more to add on these topics beyond previous comments.

1. Affordability

54. We seek comment on how the Commission should define "affordability" with respect to broadband access. How should affordability be measured? To what extent does the fact that service providers topical offer different levels of broadband capability and access at different price points affect this definition? We seek comment on the role that other programs, at the Commission or elsewhere, ma have in our evaluation of this topic. For instance, we seek comment on how to evaluate affordability for broadband services consistent with our obligation to base universal service policies on the principle that "[q]uality services should be available at just, reasonable, and *affordable* rates."[76] How should the Commission encourage consumers to more full utilize broadband access already available to them?[77] For example, through the Lifeline and Link-Up programs, the Commission partial supports the monthly subscription costs and initial hook-up fees for telephone service.[78] How do existing government subsidies of traditional telephone networks and services impact broadband uptake, deployment, and affordability? We seek comment on whether subsidizing the recurring subscription cost for broadband service, or subsidizing the fixed costs of obtaining computer equipment could address the affordability of broadband for all Americans.[79] We also seek comment on how particular consumer communities of interest should be evaluated in such programs.[80]

Response: Pass.

2. Maximum Utilization

55. A full understanding of the value of broadband networks and the Internet may not be grasped by all Americans. Moreover, man Americans may lack the complement of computer or other skills necessary to full participate in the digital broadband era. Accordingly, we seek comment on how improving the digital literacy skills of Americans would create additional demand for broadband, thus more full utilizing the broadband infrastructure. Along these lines, how does lack of a computer or other broadband access device affect broadband utilization and, if lack of broadband access device ownership is an obstacle to maximum utilization, how can that obstacle be reduced?[81] Further, are there media literacy skills that could educate our children, for example, to better understand and use all of the information available to them over this technology? How do content protections, like copyright, affect how broadband networks are deployed and used? How do such protections affect what individuals can do with broadband services and how should the Commission consider these questions in the formulation of a national broadband plan?

Response: The estimates from marketing surveys we have done in current projects indicates that about 30% of Americans in the markets involved in our projects see no need to engage in the use of the Internet or use other broadband products other that those that are an invisible transition from telephone or television broadcast services. Support plans such as those being proposed by the vertical areas mentioned below are aimed at addressing this critical aspect of broadband adoption.

A lack of a computer certainly inhibits the use of the Internet in most cases. In many cases, the only access to free computers by adults in a community is at the library. Recent reports show that library utilization of computers by the public is on a dramatic increase. Whether this has to do with the desperate search for new employment of other matters. The news is that it is the public libraries that the public turns to when it cannot afford computers nor has no residential access. Accordingly, the national strategy should emphasize expansion of access to computers and broadband at the libraries as a cornerstone of its attack.

Studies and polls also show that the learner-directed learning in libraries concerning professional work and team oriented learning far exceeds the effectiveness of learning than a traditional school structure can offer. Consequently, the national strategy should incorporate these contemporary findings into the plan and maximize the emphasis on vertical programs in this area. These approaches are reaffirmed by massive findings by the Gates Foundation and recent polls by both teachers and practitioners across the country. They all point to a simple and straightforward strategy involving reengineering our libraries to be both community repositories of digital media and also the fundamental support structure for those seeking to learn to use computers and the Internet for the first time. This is social engineering as opposed to just transmission engineering.

56. To what extent should programs that address consumer training and education about broadband play a role in a national broadband plan? For example, the Recovery Act directs NTIA to provide grants to "provide broadband education, awareness, training, access, equipment, and support to . . . organizations and agencies that provide outreach, access, equipment, and support services to facilitate greater use of broadband service by low-income, unemployed, aged, and otherwise vulnerable populations."[82] Are there ways to encourage maximum utilization of broadband infrastructure and services via the universal service programs, through federal, tribal, state, and local government initiatives, or through private and public/private initiatives? Are there specific communities that such policies should focus more heavily on, such as rural, low-income, tribal, insular, persons of color, senior citizens, or persons with disabilities? What opportunities are there to leverage federal, tribal, state, and local initiatives unrelated to broadband in an effort to increase broadband utilization? For example, are there "smart housing" initiatives that promote the connection of broadband to affordable housing?[83]

Response: Review carefully the National Library Technology Program above in Item #33. It addresses all these issues with the exception of "smart housing."

57. We also seek comment on the extent to which a centralized clearinghouse for outreach and computer and broadband training initiatives should be a component of the national broadband plan. For instance, what can the Commission learn from prior outreach campaigns?[84] If outreach programs or the development of a clearinghouse of information and programs is warranted, we seek comment on the best ways to incorporate these practices into a national broadband plan.

Response: We know of no single centralized clearinghouse for outreach and computer and broadband training initiatives. Our own work with the National Library Technology Program indicates that it has great promise and could be a useful part of the national plan, but it is by no means the only source of information on outreach programs and broadband training initiatives. You should consider forming your own clearinghouse considering the pivotal point that this matter holds for the success of the national strategy.

3. Broadband Privacy

58. Americans are using broadband to perform everyday tasks in which the pass personal and confidential information over broadband connections, raising important consumer privacy concerns.[85] As a result, it is important to consider the privacy implications of such use in connection with our development of a national broadband plan.

Response: Yes.

59. The last several years have witnessed significant growth in multi-platform services, such as mobile wireless telephones enabled with broadband Internet access; bundled service offerings of voice, video, and broadband communications; and voice services offered over broadband. What are consumer expectations of privacy when using broadband services or technology and what impact do privacy concerns have on broadband adoption and use? We also note that certain broadband providers have purchased the behavioral advertising[86] services of companies that advertise an ability to deliver the most actionable consumer intelligence by extending [those companies] reach dynamical to encompass the ever-growing network of sites that consumers visit."[87] These companies track the WebPages customers visit, the searches the perform, and the ads they click, among other information.[88] Consumers may also be aware of the technological ability that broadband providers have to perform functions such as deep packet inspection.[89] What is the impact of this type of activity on consumers willingness to use broadband services? We seek comment on how the Commission should treat issues such as deep packet inspection and behavioral advertising in developing a national broadband plan and whether there are issues related to other types of information connected with the provision of broadband services that the Commission should consider. Do these practices discourage consumers from "access[ing] the lawful Internet content of their choice" for fear of having that access tracked or revealed?[90] If consumers view this negatively, is it something that Congress or government agencies should address, or can privacy protections be achieved through industry self-regulation, such as industry best practices? Would protection of customer's private information spur consumer demand for broadband connections, and consequently encourage more broadband investment and deployment consistent with the goals of section 706?[91]

Response: Pass

60. The Commission has long been committed to safeguarding customer privacy and repeatedly has taken steps to ensure that private customer information is adequately protected. In fact, the Commission has already stated that consumers privacy needs are no less important when consumers communicate over and use broadband Internet access than when the rely on telecommunications services.[92] Should the Commission consider as part of its plan whether to exercise its ancillary jurisdiction to address broadband privacy issues, or are other approaches available?[93]

Response: Pass

E. Status of Deployment

1. Subscribership Data and Mapping

61. The Recovery Act requires the Commission to develop a national broadband plan that includes "an evaluation of the status of deployment of broadband service, including progress of projects supported b the grants made pursuant to this section."[94] We note that the Commission recently revised its Form 477 collection of data regarding broadband subscribership. In particular, the Commission is beginning to collect broadband subscribership data at the Census Tract level, including data on the number of subscribers using different technologies, and at various upload

and download speeds.[95] We seek comment on how the Commission can use these data to report on the status of broadband deployment, including an benefits and limitations inherent in these data. We also seek comment on how additional measures, such as broadband availability data and mapping, would help the Commission to accurately assess the status of broadband deploment.[96] For example, does measurement by Census Tract adequately capture deployment on tribal lands, or in rural areas?[97] Also with regard to availability, to what extent have local exchange carriers comprehensively inventoried their loop plant to the service address level to know whether their lines are capable of providing acceptable DSL service? Likewise, we seek comment on other types of data, including pricing data that could further assist the Commission in reporting to the public on the availability of broadband services.[98] Further, we seek comment on whether the Commission should collect data on broadband use supported through universal service programs. If so, how should these data be collected and used? How would the availability of additional data improve efforts to accomplish our broadband goals?

Response: The collection of census tract information is very good at a summary level. But it is better to go ahead and compile the detailed data at the service address level for the various reasons you hint at in your questions. Sometimes census tract is a pretty wide swath.

As was commented on previously, the FCC access to the broadband deployment data in a national "map" will be just as useful to the FCC as to the engineers in the various states who are planning, constructing, and operating these facilities.

We all know that the local exchange carriers have not only inventoried their loop plant to the service address level to know whether their lines are capable of providing acceptable DSL service. (This is the key point in the order entry process that answers the question of loop availability to a specific service location.) And we know that they will be reluctant to share this information with perhaps the CLECs who desperately need the information so that the LEC can reserve the pool of tested loops for themselves under normal situations. But this information would be very useful for these intended purposes. The wholesale pricing for these loops will obviously be useful in performing costing and extrapolating reasonable retail pricing.

If broadband use is supported through universal service programs, this data should be collected for analysis of current uses of funds.

2. Stimulus Grant an Loan Program

62. Recent legislation has created several opportunities for organizations seeking to build out broadband infrastructure and services to unserved and underserved areas to receive grants and loans to help defray the cost of deployment, among other things.[99] The Recover Act provides funding for broadband programs at RUS and NTIA. We seek comment on how the programs in the Recover Act should be considered as the Commission develops a national broadband plan. We also seek comment on how we would obtain data regarding the success of these programs. We note that the Recovery Act includes requirements that all grantees report quarterly to NTIA information on the use of grant funding and progress toward fulfilling the objectives of the award.[100] We also note that agencies must make broadband applicant information available on their websites.[101] Further, the Department of Agriculture must submit information to Congress regarding the RUS grants and loans provided under the Recovery Act. We seek comment on how the Commission can best access that information for purposes of implementing a national broadband plan. In particular, we seek comment on whether the information regarding the grants the Commission must monitor are limited to the NTIA grants,

given that the RUS grants are located in a different section of the Recovery Act. Finally, we seek comment on how the Commission might work with NTIA to ensure that the Broadband Technology Opportunities Program (BTOP), including requirements like the nondiscrimination and network interconnection provisions, operates in an effective and efficient manner under a national broadband plan.

Response: The FCC needs access to the data warehouse of mapping information used for the mapping program as detailed in other Items. This includes both the NTIA and the RUS collected data.

F. Specific Policy Goal of the National Broadband Plan

63. The Recover Act requires the Commission to develop a national broadband plan that includes a plan for the use of broadband infrastructure and services in advancing" a series of public policy goals. [102] We seek comment on how to interpret this requirement and how the Commission should implement this in its development of a national broadband plan. Below, we seek comment more specifically on each of the policy goals in the order in which they are enumerated in the Recover Act.

1. Advancing Consumer Welfare

64. In the development of a national broadband plan, the Recovery Act requires that the Commission include "a plan for the use of broadband infrastructure and services in advancing consumer welfare."[103] We seek comment on how to interpret and implement this directive, including an analysis of easting Commission policies, programs, and proposals for advancing consumer welfare through the use of broadband infrastructure and services.

Response: Pass.

65. Consumer welfare has been an important consideration in recent Commission broadband decisions. Among other actions taken to protect consumers, the Commission has issued an *Internet Policy Statement* defining rights consumers should have when the access the Internet regardless of what service provider the choose,[104] and enforcing these policies when the have been ignored b service providers.[105] The Commission also currently is considering additional consumer protection rules proposed in the *Consumer Protection in the Broadband Era NPRM,* which sought comment on the need for an non-economic regulator requirements necessary to ensure that consumer protection needs are met by all providers of broadband Internet access service, regardless of the underling technology.[106] We seek comment on how to incorporate both the consumer rights addressed in these proceedings, and the providers network and facilities management practices for prioritizing service and bandwidth into a broader, nationwide plan for broadband development.[107]

Response: Pass.

66. We request comment specifically on the role that privacy protections can play in enhancing consumer welfare. If consumers feel secure that the can calibrate the privacy level of their broadband communications, are the more likely to experience the benefits associated with broadband use? What is the role of applications providers in guarding privacy so as to encourage greater use of broadband-enabled services such as photo sharing, online tax filing and bill payment, remote data storage, permanent" social networking, and others? Do data retention policies and fears that digital records are inhibit use of broadband technologies?

We ask for comment generally on how advances in technology are helping to advance consumer welfare. We seek comment on what applications are emerging or may emerge in the

future that will advance consumer welfare and what their network requirements will be. As Internet and computing security issues consume a great deal of resources by consumers of all types, how should the Commission take security issues into account as it develops a national broadband plan? Additional, we seek comment on how consumers understand the dependability of broadband services and if there are ways to improve consumer understanding of the benefits and limitations of their services. Would consumer welfare be enhanced by more disclosures to customers of any limitations that providers place on broadband services, including limitations that may be placed on service on a temporary or intermittent basis, to deal with network congestion or for other reasons?

What aspects of broadband policy have improved consumer welfare, promoted competition, and led to technological innovation? Are there negative aspects of broadband that should be considered when assessing consumer welfare? How can these aspects be minimized while maximizing the potential benefits?

Response: The one aspect of this issue that we feel that we need to address is that as broadband becomes adopted to the point that lives depend on its operational availability, it is important that service availability be ensured to 99.999%.

68. We seek comment on the interplay between consumer welfare and the market generally. Where does market competition for broadband customers fall short of providing sufficient consumer safeguards and where must the government step in to ensure that consumers are being properly protected? How can the government maximize the efficiency of its consumer protection regulations? We also seek comment on how the Commission and other agencies should evaluate consumer protections for broadband and broadband-enabled services in ongoing reviews,[108] and we seek comment on how the Commissions plan will consider developments in the regulation and classification of broadband services.[109]

Response: Pass.

2. Civic Participation

70. The Commission is also instructed to formulate "a plan for use of broadband infrastructure and services in advancing . . . civic participation."[110] We seek comment on how to interpret and implement this portion of the Recover Act. We also seek comment on how the goals of open and accessible government aimed at increasing public awareness and participation in government can be amplified b access to broadband. For example, what are new uses of broadband that would further open government and civic participation? How do new media, including social networking tools, advance civic participation, and are there limitations or concerns associated with such use? There is a constant push towards greater transparency in government, including innovative methods for direct public access to government and participation in decision making. We seek comment on how broadband infrastructure and services can improve citizen access to local and national news, information, dialogue with government and other citizens, transactional efficiency, and participation in governance. What are the positive and negative consequences of such disintermediation?

Response: In programs that include planning of new broadband facilities, community engagement is needed to ensure participation in the process. This will affect the adoption rate. It will also affect the adequacy of the approaches concerning local nuances and differences. To the extent that the public can participate in the planning, testing, and ongoing monitoring of services, the quality will improve. This is axiomatic in quality circles.

71. We also seek comment on how broadband infrastructure and services enable amateur content creation and distribution. For example, does access to broadband increase the ability of the average citizen to make her voice heard by the government and other citizens, and if so, how can this be advanced? Similarly, we seek comment on the benefits of video streaming or video conferencing of government meetings to enable participation by those who cannot attend a meeting in person (because of distance, cost, disability, illness, and the like). Are there other applications of broadband technology that can improve civic participation and how can they be encouraged?

Response: Implemented wisely relative to scale, the video measures are all very useful to the overall strategy. One might speculate that there are two grades of service on these matters: casual access and commercial access. These would be defined as those video transmissions whose expectations are suitable for best-effort Internet access and those telepresence expectations where Quality of Service is set to provide more lifelike experience and freedom from distraction that impedes the richness of subtle communications required by situations where feelings must be determined by subtle facial motions.

3. Public Safety and Homeland Security

72. In the development of a national broadband plan, the Recovery Act requires that the Commission include plan for the use of broadband infrastructure and services in advancing . . . public safety and homeland security."[111] We seek comment on how to interpret and implement this directive, including an analysis of policies and programs that are on point. We seek comment on how to identify which broadband services are most needed to advance public safety and homeland security. For example, should the Commission focus on broadband high-speed Internet connectivity for public safety and homeland security needs? How should the broadband infrastructure be designed in order to support both the needs of the public for connectivity to the global Internet and the needs of emergency services for connectivity to a restricted, private IP infrastructure? We seek comment on how advancing public safety and homeland security is interrelated with improvements in telehealth and telemedicine deliver through broadband. We also seek comment on how access to broadband capability may promote interoperable wireless-based communications among various public safety agencies and jurisdictions, as well as plans and benchmarks to improve interoperability. Similarly, we seek comment on how access to broadband capability in general and specific broadband services in particular will ensure that broadband-based applications and support systems (over any broadband transport platform) are compatible among different public safety agencies.

Response: Interoperable communications for public safety are essential. The xenophobic tendencies in public safety are legendary, but for the sake of the public, these human tendencies must be effectively dealt with. Some specific comments:

Emergency services needs for connectivity to a restricted, private IP infrastructure does not mean private physical infrastructure just as public safety does not need private streets to drive on or private air to breathe. This is more of a matter of security, privacy, and transmission priority.

LMR voice communication depends on spontaneity of connection, authorization of connection, and quality of connection. LMR traffic is not Internet traffic. LMR traffic can be delivered in parallel with Internet traffic on shared physical infrastructure without invading capacity allocated for other matters.

Prior generations of LMR communications are incompatible and very difficult in situations where interoperability is desired and authorized. You should convene a conversation aimed at dealing with this problem with the prominent vendors. A strategy for dealing with and containing the destructive tendencies of xenophobia needs to be a part of the national strategy. At the same time, the tendency for vendors to want to introduce proprietary equipment to minimize competition must also be neutralized in the national strategy.

The current restrictions the FCC places on use of communications facilities that prevents the first responder networks from connecting to medical networks is insane and needs to be lifted with the stroke of a pin. The unintended consequences that prevent the free flow of communications for any purpose whatsoever because federal funds were used in constructing the facilities is a disaster that must be rectified. These legendary problems with public policy must be dealt with immediately.

73. We seek comment on whether and to what extent the national broadband plan should address means to protect and advance cybersecurity, specifically with respect to those broadband networks critical to the nation's critical infrastructure, financial institutions, public safety and homeland security. If so, what steps should be taken to secure the nation's most vulnerable broadband facilities and data transfers from cyber threats, such as espionage, disruption, and denial of service attacks? Should certain broadband service providers and operators adhere to specific standards or best practices to minimize such threats? Should the Commission adopt a process whereby communications providers can certify their compliance with specific standards and best practices? What agency or organization within the government is best positioned to take the lead inter-agency coordination role for protecting against and responding to cyber security attacks?

Response: The communications medium should be considered as if it were all open air. Each endpoint must defend itself accordingly. The thought that the bad guys are all on the outside is naïve.

74. We seek comment on any special concerns about ensuring physical diversity or redundancy in public safety and critical infrastructure industry networks and how to track and measure these factors. We seek comment on these issues with respect to commercial networks, as used by public safety entities for emergency communications. We also seek comment on strategies for improving network redundancy and hardening network assets.

Response: The engineering aspects of achieving redundancy and resilience are too numerous for this response. But the goal of the broadband network must be to achieve 99.999% availability. The most difficult part of this is of course the last mile. Until those institutions who are involved in life threatening matters have the opportunity for redundant and resilient access to broadband reach, the job is not yet done.

75. We seek comment on how developments in broadband technologies and broadband-enabled services impact public safety and homeland security goals. Specifically, in preparing a national broadband plan, how should the Commission take into account the advent of advanced commercial wireless broadband technologies, such as LTE and WiMax? Are "off-the-shelf" solutions sufficient? Why or why not? What broadband policies would best promote the deployment of n e t generation 911 (NG 911) networks, including emergency services IP networks? How might the results of NTIA's obligation under the NET 911 Act to develop an NG 911 migration plan assist with ensuring access to broadband service by public safety answering points (PSAPs) and establishing appropriate benchmarks?[112]

Response: To the extent that LTE and WiMax technologies are used for voice and video services, they are part of the public safety goals. Just as with satellite plans, the priority use of LTE and WiMax channels needs to be dynamically preemptable to support emergency communications.

PSAPs should be required to support NG911 networks at the same time as providers are required to provide them.

The location sensing aspects of mobile technology needs to be transparent to the subscriber unless the subscriber specifically opts to remain undetectable.

76. We seek comment on how the public safety, homeland security, and health care communities envision using broadband both near-term and in the future. Specifically, what features are most important: live video; data transfer; web access; IP-based voice; security and encryption; mission critical or emergency use; virtual private networks; deployable systems for special events, disasters, and pandemics? What are the costs to public safety entities of obtaining broadband service (whether commercial or self-provisioned), devices, and applications, and what sources of funding are available? Are there opportunities for pooling resources, such as shared infrastructure? What models, such as statewide networks, have been tried and shown successes or limitations? What broadband networks exist or are planned? How are public safety entities currently utilizing or planning to utilize commercial mission broadband networks to carry out their missions? Are such networks used for critical communications? Are there accommodations that commercial carriers have made for public safety users, such as increased geographic coverage, back-up power or hardening of facilities against weather or terrorist events, enhanced security, or enterprise customer discounts? At what cost? What limitations are public safety entities encountering with respect to commercial broadband networks, and what needs are going unmet by commercial offerings? We seek comment on how to achieve economies of network a resource sharing by public safety, where there is dedicated broadband network that connects health care providers in a state or region."[113]

Response: The articulation of this question implies a fine understanding of the problems.

Much of the work studying these issues by the states has resulted in the recommendations for additional study. There are many reasons for this phenomenon. But if this is a state-level problem to solve, bring best practices to the state groups charged with interoperability will be very helpful.

77. The Commission has previously found that wireless broadband services will play an essential role in the ability of public safety entities, especial first responders, to fulfill their mission to protect the health, welfare and property of the public.[114] What role should existing fixed and mobile spectrum allocations, which are able to support public safety broadband deployments, have in the development of a national broadband plan? Specifically, how can the 4.9 GHz band meet the broadband needs of the public safety community? In developing the national broadband plan, what is the interplay with our current rulemaking addressing public safety services in the 700 MHz band? For example, in a separate proceeding, the Commission is seeking comment on how to promote the development of a nationwide, interoperable broadband network for the nations first responders.[115] What additional steps should the Commission take with regard to other spectrum bands available for public safety use, such as the 4.9 GHz band, in order to help meet the broadband needs of the public safety community? What special considerations, concerns or limitations should be taken into account specifically with respect to public safety broadband deployments in rural areas?

Response: For anything other than resolving the LMR problem, the various frequencies will be easiest to use in interoperable fashion when they operate as a private extension of the Internet.

78. In the instant proceeding, we seek comment on what part, if any, the development of an interoperable public safety broadband network should play in the overall plan for the use of broadband infrastructure and services in advancing public safety and homeland security. We seek comment on whether there are programs at other agencies that should be considered as a part of the national broadband plan. We also seek comment on what lessons the Commission can incorporate from its existing policy roles impacting public safety and homeland securit.[116] Finally, we seek comment on how plans and efforts to advance public safety and homeland security should be coordinated between and among the various federal, tribal, state, and local entities.

Response: Pass.

79. The prospect of a pandemic outbreak or act of bioterrorism raises the potential for radically shifting network traffic patterns. A likely result of a pandemic or bioterrorism threat is a large surge in citizens telecommuting from their homes or other locations rather than from their typical work sites. Could such a shift in broadband use from the workplace to the home trigger significant congestion and delays in the flow of data over broadband networks, particularly at the enterprise and residential Internet access levels? Should a plan for access to broadband capability address this possibility, and if so, how? For example, in such an event, would traffic prioritization schemes be necessary to maintain the flow of data essential to the nation's economy, public health, and defense? We seek comment on whether the national broadband plan should include a prioritization scheme to account for pandemic and bioterrorism threats. If so, which agencies should have the authority and responsibility for setting priorities, and how should these priorities be established and enforced? For example, should traffic be prioritized by traffic type, by destination, or by some other qualifier?

Response: The traffic should be prioritized by class of service. And then classes of service should be defined for priority use. The authority and responsibility for setting priorities should be done in an analogous fashion to the way satellite frequencies and channels are controlled.

4. Community Development

80. The Recover Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . community development."[117] We seek comment on the interpretation and implementation of this portion of the Act. While one of the benefits of broadband is the ability to connect more efficiently with the global community, we seek comment on how it could be used for developing local communities. For example, how could a local community use broadband Internet access to identify local problems and enhance methods for solving those problems? Does or can broadband be used to help develop local resources, assess the needs of the local community, and foster cooperation and volunteerism on a local level? How can broadband be used as a resource for economic development in communities across America? How could broadband be used to provide communities with local news and information? How can the universal service High-Cost, Low-Income, Rural Health Care, and Schools and Libraries programs be modified to encourage by community broadband development? What other local social goals may be impacted positively by broadband, and how could broadband access be used to further those goals?

Response: The primary problem to be addressed by these matters is one of awareness. If you are not on or don't use the Internet, the Internet cannot make you aware of what is

going on or offer you a channel for doing anything about it. Public digital signage is an emerging mechanism for enhanced awareness. Much more needs to be explored on this new medium for achieving awareness. The national strategy needs to include an understanding of the rhythm of how individuals can do the following things:

- Be aware of events that are happening in their environment and vicinity
- Distinguish between noise and significant events
- Gather information necessary for an action plan
- Initiate actions on decisions
- Receive feedback on the consequences of initiated actions.

The concept of the community media centers and the previously discussed ideas on acceleration of the adoption rates are important here.

5. Health Care Delivery

81 The Recover Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . health care deliver."[118] We seek comment on how to interpret and implement this portion of the Act.

Response: The national strategy should include elements whereby healthcare goals are enhanced through the use of broadband.

82. Electronic medical records are an important aspect of modernizing our healthcare system and stimulating our economy. Federal agencies are actively working to develop interoperable Health IT standards.[119] We seek comment generally on the interaction between broadband development and improved access to medical records and healthcare. For example, how can broadband infrastructure and services be used to develop more efficient, effective, and secure access to medical records? We also seek by comment on ways to advance broadband networks that are consistent with the Health IT standards set HHS to support and promote the NHIN.

Response: To back up for a moment, the overall goal of healthcare is to have healthier people. In order to have healthier people, it is now known that only when individuals begin to take more responsibility for their own health does the general level of the state of health improve. So by focusing on the context of the original goal, it becomes easier understand what should be done relative to the records.

By examining the process of healthcare, one sees that the patient must sense that there is something wrong and make a decision to do something about it. The patient must engage in proactive conversation with the physician in order to have a better analysis and diagnosis of the patient's condition. In an environment where the introversion of many doctors is renown, it is this informed engagement that leads to better outcomes. Part of this improvement is facilitated by public announcement, a particularly important aspect of awareness can occur in the waiting rooms where attention is focused on the matters at hand. Information prompting understanding of potential situations and potential approaches is best done in this environment. The prompting of questions to ask to get the busy doctor going in conversation can be well taught here.

Access to medical records can lead to more informed dialog with the physicians. And of course between physicians in cases where a referral is warranted.

And the physicians and healthcare practitioners need to stay current also and in certain cases remain certified in important matters.

So the communications in and around the overall goal of achieving healthier people are varied. From the digital signage essential to the awareness programs, to the access to healthcare records so that more informed dialog can take place with the physician, to the maintenance of currency on the part of physicians and practitioners, to the interchange of imagery and lab results, to the administrative matters surrounding insurance and payment matters, the broadband system has many dimensions. And the overall formal and informal healthcare information network must support all these dimensions.

83. Consistent with the Health IT policy goals outlined above, in 2006 the Commission initiated a rural healthcare program supported b universal service funds.[120] The Rural Health Care Pilot Program supports up to 85 percent of eligible costs of designing, installing, operating and maintaining a broadband health care network that is available to eligible healthcare providers.[121] Pilot Program participants are required, where feasible, to use Pilot Program funding in was to ensure their funded broadband network projects are consistent with HHS's Health IT initiatives in several areas: Health IT standards; certification of electronic health records, personal health records, and networks; the NHIN architecture; the National Resource for Health Information Technology; and the PHIN.[122] Pilot Program participants must also submit quarterly reports providing detail on how their supported networks have complied with the HHS Health IT initiatives.[123]

Response: Yes.

84. We also seek comment on how improved broadband infrastructure and services can increase the quality of medical care available to unserved and underserved parts of the country through tele-health initiatives. For example, how effective have existing efforts been and how can they be improved? To what extent would potential regulations impede or enhance development of a vibrant nationwide tele-health network? What effect would this network have on our economy and jobs? We also seek comment on was in which Rural Health Care Pilot Program projects are advancing implementation of a national interoperable health information technology infrastructure. In doing so, we seek comment on lessons learned from the pilot and suggestions concerning how the Rural Health Care program can further this initiative.

Response: The restrictions that prevent healthcare infrastructure from being shared with other related and unrelated such as first responders or sustainability programs is astounding. Immediate action is needed to stop this nonsense. This propagation of the mistakes associated with the e-rate program into the telehealth network has got to be stopped. You should institute a massive awareness program into those assigned to deal with these misguided rules and individuals who propagate these phenomena.

85. We also seek comment on how we can continue to work with HHS and other agencies to maximize the penetration of tele-health initiatives, educate citizens on broadband and tele-health options, and generally use broadband to increase health awareness, diagnosis, and treatment. Finally, the Recover Act requires that HHS, in consultation with other government agencies, including the Commission, conduct a study and report on the availability of open source health information technology systems.[124] We seek comment on how to consider the availability of open source health information technology systems with respect to the national broadband plan, which, as stated, includes a plan for use of broadband infrastructure and services in

advancing health care deliver.

Response: The program underway by the national Association of Community Healthcare Centers to promote awareness and provide guidance at just the right moment to help patients begin to assume more responsibility for their own health is a perfect example of how to use broadband to initiate the cycle. When combined with certified programs for securely storing and exchanging EHR records in the manner described above, the vision begins to be realized. This holistic cycle should be encouraged wherever it emerges.

6. Energy Independence and Efficiency

86. In the development of a national broadband plan, the Recovery Act requires that the Commission include "a plan for the use of broadband infrastructure and services in advancing . . . energy independence and efficiency."[125] We seek comment on how to interpret and implement this directive, including an analysis of existing Commission and other agency policies, programs, and proposals designed to advance the policy goals of the Recovery Act. Federal policy and recent legislation have trended towards implementing more efficient energy distribution mechanisms. Are there broadband applications that could help to improve efficiencies in energy production, distribution or consumption, ear like smart grid technology?[126] In 2007, Congress set aside $100 million per fiscal year between 2008 and 2012 for developing and implementing smart grid technologies.[127] The Recovery Act provisioned $11 billion for the same goal.[128] We seek comment on how broadband infrastructure and services could help achieve efficient implementation of smart grid technology. Are there other organizations, such as the Department of Energy, with which the Commission should coordinate? We also seek comment on how these aspects of the national broadband plan will affect the economy and the creation of new jobs.

Response: First of all, you should observe that most of the smart grid initiatives are designed to reduce costs as opposed to reduce the actual energy that is produced and consumed. The energy independence plan needs to fully examine three different sections of the problem: the generation of energy in the first place, the distribution of energy, and finally the consumption of energy.

To be sure, the smart grid projects will support one of these three elements well if given the same amount of focus as the broadband program. But the control and monitoring of consumption may turn out to be the most important and least discussed element.

The control of consumption is done by the consumers and not the power companies. No consumer, not one, is going to sit still and abdicate the responsibility for their own comfort to a power utility with only general notions of what is going on in a consumer's home or business. No, that awareness, monitoring, and control has to be borne by the consumer. [Just as in the trend for additional self responsibility in the realms of healthcare and in education] So the additional goals, objectives, programs, and technologies to watch are those that allow a consumer to monitor and regulate their own usage of power more carefully on the consumption side. These in home networks supplemented with sophisticated opt in monitoring and control bureaus will reduce the consumption of power by an average of 15-25% typically. These programs in combination with the smart grid projects designed to reduce utilities' costs are the answer. This combined with alternative energy generation that supplements traditional grid approaches.

Stand by for the world's first solar powered city to be built in southwest Florida.

87. How does the potential for more widespread use of teleworking based on access to broadband capability factor into our country's energy independence and efficiency? Would the opportunity for workers to "commute" over a broadband network rather than over roads or other transportation networks have a significant effect on the amount or source of energy that we use on a regional or national level? Is there an energy conservation role for intelligent highways, which may use broadband technologies for such things as traffic control?[129] What standards and programs exist regarding energy efficiency of consumer and commercial electronics for broadband? We also seek comment generally on how broadband technology can be leveraged to make the United States more climate-friendly, and how a national broadband plan can help us achieve this goal.

Response: The use of telecommuting cannot be overstated in this era of achieving energy independence. However, to make telecommuting successful, we must address the shortcomings of the technique, also. The fundamental shortcoming of telecommuting is that the environment is not conducive to productivity with many people. Indeed, the distractions of working at home are problematic with many people. In addition, as is well documented in distance learning programs, if there is not an opportunity to mix with other together in one location periodically, feelings of alienation, boredom, and "going native" begin to arise. The analysis shows that social interaction and team oriented problem solving is need at least once every two weeks for a healthy work environment and best productivity.

This is why telecommuting companies are so interested in the use of the libraries as described above and below as the essential meeting place for teleworkers. The opportunities for such community gathering are essential for the establishment of a large body of efficient teleworkers here in the United States.

7. Education

88. The Recovery Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . education."[130] We seek comment on how to interpret and implement this portion of the Act.

89. It has been said that education is the key to our future economic success. What role can broadband play in boosting the quality of American schools? Can the availability of broadband be used to encourage more technology partnerships between schools and businesses? In what ways does broadband access allow children and adults with disabilities to participate more full in school and other educational activities? What is the role of this country's libraries in marshaling broadband access to advance education?

Response: This is a very important aspect of the national strategy. But the first aspect to understand is that there are two semi-distinct education paths at work here in the United States. First, there is the structured education system that we all know and love so well. It is teacher directed and its operation has become institutionalized and largely unionized. It has a well documented track record for success relative to other nations.

But second, there is another education process flourishing in the United States today. It is the learner-directed environment. Now, if the original goal of the Original Intent was to create smarter children and smarter adults, this environment is actually acknowledged to work better than the structured schooling environment in many ways. For the most part, this self-directed approach is centered in the libraries, through the use of the Internet, and in vocational schools. The problem is that if you don't have access to the

Internet or have never become literate in the ways of computers, you can't avail yourself of this faster path to specific knowledge.

So the library plan as described at length above is very key to the education process… even in conjunction with regular schools. The fundamental problem is that the schools are not as readily accessible as the libraries are for adults, and the technical support is not as comprehensive or as complete as is planned for the National Library Technology Program. Indeed, it is sad to report that much of the equipment financed by e-rate programs sits in schools largely unused because the adoption programs were unsuccessful with school teachers and the lab procedures sometimes limit the use of the equipment. Not so at the libraries. It is a different motivation that drives the usage and the technical support requirements in the professional advancement and some of the social aspects of the learner-directed model.

Also, as described above, the new genre of e-books designed to support people with a variety of disabilities is being readied for the market. This will address the needs of the over 14 million people with disabilities in ways that traditional books cannot do.

The classrooms are slowly being redesigned with large screens and multimedia facilities especially designed to support students with disabilities. Our work with specialty schools that specialize in support of the deaf and the blind show a need for some seven different techniques requiring specific types of inter and intra-school networking, video and sound systems, big print and devices with the sense of touch, and special security can care systems that exceed normal requirements in certain areas.

What is needed for the national strategy is a sense of organization for the storage and access of digital media made easy for the everyday life in schooling… both from the standpoint of the teachers as well as the students and parents. Also found in our various pursuits was an avid need to share materials, both instructional materials, assignments, and completed work not only between students and teachers, but also with parents. This is so that the collaboration on the student's learning can be more complete. Also the need to draw the students' need for social interaction into the sharing of materials and team oriented problem solving.

These are all major portions of the needed adoption programs contemplated by many and solely needed in the national strategy.

90. How can a broadband plan maximize the benefits that our nation can derive from distance learning? Are the potential benefits greater in, and should our attention be focused more on, an particular scholastic level, such as grade school, middle school, high school or college? Should resources be directed more toward institutions or student locations? Does the potential to take online courses and earn a degree from a remote location increase the chances that people will earn a degree? What are the benefits of teaching media literacy to students of all ages so the can better utilize the information they receive?

Response: What is needed is a strategy that focuses on where and when a student is able or wants to participate in distance learning. Correctly personalized, distance learning is applicable for all age groups… from 4 to 84.

There are two emphasis areas: one for where and when the student is able to receive any form of distance training, and secondly on the empirical fact mentioned above that there must be social interaction every two weeks involving team oriented problem solving and

collaborative instruction, otherwise the distance learning mode becomes relatively ineffective.

The media literacy becomes essential as people's professional success becomes more dependent on reach for the latest information and up-to-the-minute interaction.

91. In recent years, broadband access has allowed schools, parents, teachers and students to communicate and share valuable information online. How many parents, teachers and students are missing out on these benefits because of a lack of computers, computer literacy, or access to broadband? What other barriers are there to bringing the benefits of broadband into the classroom, and what can be done about them?

Response: The sterile environment of the computer labs constructed as if they were chemistry labs causes limited adoption of computers and limits computer literacy. The consensus is that "Out of Classroom" experiences are the most relevant form of expansion of learning. Especially when tied to immediate professional goals and involving team solutions.

Again, refer back to the community center approach that is pointed to by many, many parties.

92. The Commissions E-rate program helps schools and libraries obtain affordable telecommunications, Internet access and internal connections b providing discounts on eligible equipment and services.[131] We seek comment on how this program fits into a national broadband plan. Does the Commission need additional data on the broadband needs of schools and libraries or on the services currently being supported in order to best determine how E-rate would fit into a national plan? If so, how should these data be collected?

Response: The national plan needs to recognize that libraries and schools are different things. The filters required by e-rate for use of the Internet in schools tens to disqualify e-rate from ever being used by libraries. This is the number one request you will receive from librarians across the United States. Once this misguided issue has been resolved, the applications for e-rate to expand the access of broadband to libraries will start to pour in.

The inability to share bandwidth freely and the filtering of data intended for adults are the top two problems with e-rate as it has been institutionalized.

93. We also seek comment on how we can work with the Department of Education to maximize the positive impact that a national broadband plan would have on the Department of Educations initiatives. In addition, we seek comment on how we can identify existing and planned state initiatives that use broadband to advance education and incorporate these into our preparation of a national broadband plan.

Response: Pass.

8. Worker Training

94. The Recovery Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . worker training."[132] We seek comment on how to interpret and implement this portion of the Act. For example, how can American workers use broadband to increase their workplace effectiveness, both for training and on a daily basis? How can access to broadband be utilized b citizens; state, local, tribal, and federal governmental agencies; and educational institutions, among others, to enable worker

training in preparation for employment, including when workers are laid off, between jobs, or preparing to re-enter the workforce after a number of years? We also seek comment on how we can work with the Department of Labor to maximize the positive impact that a national broadband plan would have on the Department of Labors initiatives. How could we work with the Department of Labor or other organizations to ensure that the American worker benefits from increased broadband access?

Response: Work with the libraries and the private enterprise that are ready and most able to set up these training and meeting facilities to expand the opportunities and actual employment of teleworkers. Set the catalyst in place with the recommended library program. Private enterprise is ready to start tomorrow and will handle all the details of making this program a success.

9. Private Sector Investment

95. The Recovery Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . private sector investment."[133] We seek comment on how to interpret and implement this portion of the Act. For example, how can Congress or the Commission encourage private sector investment in broadband technology and services and the services and economic activity that the support? Likewise, how can Congress or the Commission encourage uses of broadband infrastructure and services that stimulate private sector investment in a variety of contexts *(e.g.,* seed programs, technology hubs, unlicensed services)? Some communities have developed their own broadband projects where private sector competition has not yielded sufficient results.[134] We seek comment on the efficacy of encouraging the development of local and municipal broadband projects that compete with private enterprise. Does such public investment discourage or encourage private investment? What can we do to encourage private sector investment in broadband apart from loans and grants?

Response: Seed programs like the National Library Technology Program as an organized set of well recognized hubs in conjunction with the seed programs with companies such as Expedia.com and Intuit will be excellent techniques. Plan for 20 – 30 seed programs, and then plan to the hubs as conceived in the mentioned program from the pilot beginning of a few hundred to all 16,500 locations.

These private sector initiatives not only address the need for immediate attention for jobs, but also the sustainability program for the transmission aspects of the expansion.

The emphasis should be on developing municipal broadband projects that do not compete with retail service providers, but who instead provide wholesale infrastructure on an open access basis. Not only is this a requirement in order to get NTIA funds, it also just makes good business sense.

But the benefits of developing the telecommuting environment go far beyond just the investment opportunity. Some statistics that support other goals are equally interesting. Comparing a traditional business or call center versus one practicing Open Work philosophies, the following are the cost and carbon savings for a 100 and 200 person operation:

- Assuming 100 employees who telecommute 75% of their time, the cost savings (productivity, reduced absenteeism, retention & recruitment, office space, gas savings and gas savings to the employees) to the enterprise would be $729,644, and the CO_2 reduction would be 1,522,817 lbs. of CO_2. This translates into the

equivalent of 126.5 passenger vehicles taken off the road each year, or 78,403 less gallons of gas consumed per year, or 1,606 less barrels of oil consumed, or 91.49 average American homes' electricity use for one year.

- In terms of hours saved, assuming 20 days of work per month, the 100 person firm would save double the numbers for a 200 person firm. Double these numbers for a 200 person firm.

- The productivity gains would be 240 hours per person saved per year commuting, 24K hours per 100 person, firm, and 48K hours per 200 person enterprise (assuming average 20 day per month, per person workload).

This is not to say that we have exhaustively computed all the benefits… but the first look is very promising.

96. We seek comment on how to accurately measure private sector investment both in and as a result of broadband infrastructure and services. For example, how and from what sources should we obtain these data? Additionally, we seek comment on how to analyze the data we receive.

Response: Not all information about private investment into the support ecosystem for the broadband network is going to automatically be given to you or available to you. We would suggest direct participation in the visioning that promotes and expands the ecosystem, tracking where it goes, and then politely asking for the information through carefully guided market survey information. This will need to be an opt in process.

97. *Research and Development.* As with any other technology-based enterprise, research and development (R&D) play a key role in developing broadband infrastructure and services. Some experts have stated that the United States ma have to pa a high economic price in the future for falling out of the lead in these areas.[135] As we contemplate a national broadband plan, we seek comment as to whether the change in financial markets or other global competitive factors are having an impact on the continuing development of cutting edge technologies in the United States. We seek comment on how to move our nation forward in research and development of net-generation technologies. For example, should such an effort include more government-funded research and development? Do we require more basic research? We also seek comment on how this particular economic climate should inform any efforts to stimulate R&D.

Response: Much of the valuable lessons for how open access broadband works come from other countries, primarily Nordic and Asian, where the practice got an earlier start than here in the United States where R&D was more monopoly driven despite the pretense of competition.

There are new elements of the open access ecosystem that are emerging here in the United States as a result of the ARRA opportunity. But they are obviously still at the starting point other than any experience from involvement in other countries. You might consider stimulating R&D in these companies that are generating the new practitioners here in the United States. Our involvement has been with the MetroCore concept, but there will undoubtedly be others.

10. Entrepreneurial Activity

98. The Recovery Act directs the Commission to include in its national broadband plan "a plan for use of broadband infrastructure and services in advancing . . . entrepreneurial activity."[136] We seek comment on how to interpret and implement this portion of the Act. For example, web-based entrepreneurial ventures abound. We seek comment on how increased access to broadband would either improve existing ventures or create new ones. How does widespread broadband access impact traditional entrepreneurship? Could potential access to widely dispersed resources and workers over a broadband network change the likelihood of success? Could the success rate of small businesses be improved as a result of a national broadband plan?

Response: Absolutely. Consider the plans from companies such as Expedia.com and Intuit to be models in point.

But there is more to the matter than just expansion of already in place networks. The entire notion of expansion of innovation and autogeneration of entrepreneurship is more than just adding venture capital. (Although without venture capital, entrepreneurship rarely happens in any abundance.) What is needed is the right incubator ecosystem to generate new companies. And by incubators, we don't mean cheap warehouse space with a card table, a telephone, an Internet connection, and a receptionist. We mean a carefully orchestrated environment of collaborative proximity, of social attraction, of technical support, and access to resources that one could never afford to pay for oneself, plus an expectation that one is duty bound to produce captivating and lucrative ideas daily… surrounded by other people of similar persuasion.

After having scoured the world with this same question you pose in mind, the global company Blackboard will tell you that the finest example of the model you seek is strangely enough down in the jungles of South America in the country of Colombia. Born not of the intellectual ivory tower, but of the desperation of necessity, ParqueSoft embodies the entrepreneurial spirit you seek. This followed up closely by the spirit of our own Silicon Valley in the bay area in California, followed then by warrens of our own back yard here in the Route 128 area in Massachusetts.

Our experience in Massachusetts is that small companies will pick up and move to other communities where the broadband connection is the fastest, and then move back later on when Verizon gets around to wiring the original community with FIOS. Well, maybe they will move back. It's a matter of whether the original community had the trappings that attract 24 year olds to want to live there. This is not a matter of fancy. This phenomenon is a cold, hard fact.

99. In the 700 MHz auction, the Commission adopted a requirement for licensees in the 700 MHz Upper C Block to provide an open platform for devices and applications, subject to certain conditions, a move that was supported by a coalition of entrepreneurs.[137] We seek comment on whether additional open platform or open network regulations, including expansion of the 700 MHz C Block regulation to other wireless spectrum, would stimulate or harm the development of new and innovative services previously ignored by incumbent carriers and providers. Commenters should include estimates of the positive and negative effects of such regulations on the economy and job creation.

Response: The problem you encountered with the previous auction was that you expected to extract too much of a pound of flesh from those entrepreneurs in terms of your asking

price as opposed to stimulating the ease of the offering and then promoting multiple carrier arrangements for using it. The reason the other carriers ignored the block was that their business models are based on the scarcity of resources as opposed to the actual service being rendered. Try again with a more realistic understanding to the business model of those you seek to launch the services.

On the brighter side, there appears to be a slight parting of the clouds. On the day that Verizon announces that it will sell services that do not care whose infrastructure they run one, the war will have been won here in the United States relative to open access. It will be a change from which there will be no turning back.

The question we pose to you is: did this event actually occur just two months ago?

100. We also seek comment on how we can work better with the Small Business Administration to maximize the positive impact that a national broadband plan would have on the Small Business Administrations initiatives.

Response: Pass.

101. *Diversity in Ownership*. In section 257 of the Communications Act, Congress tasked the Commission to eliminate market entry barriers for entrepreneurs and other small businesses in the provision of services such as broadband information services, and to promote the policies and purposes of the Act favoring, among other things, a diversity of media voices.[138] Further, section 309(j)(3)(B) of the ensuring Communications Act requires the Commission to promote various objectives such as that new and innovative technologies are accessible to the American people" by disseminating licenses to members of minority groups and women."[139] We seek comment on how the national broadband plan can incorporate these objectives, particularly participation in the broadband industry by new entrants and small businesses, including minority and women-owned businesses. What are the barriers to entry for such entities, and what are the ways to encourage diversity in the provision of broadband services? We invite commenters to propose mechanisms that they believe would better advance our goals of promoting diversity and new entry in development and deployment of broadband networks.

Response: We comment that small businesses are usually where the best new ideas show up first. This we learn from the upper management of the GSA. Therefore, ways should be developed to find and extract these best ideas from their earliest source. Specifically, you should look for opportunities for emphasizing the selection of small businesses when it comes to categories requiring innovation.

As to the diversity matters regarding minority and women-owned businesses, you should always select the best people for every job. Our experience is that minority and women-owned businesses have plenty of smart and capable people. You should make sure you can find these sources and make them aware of the opportunities that are available. Then help them with their application so that they do not miss opportunities that would otherwise have been available to them.

11. Job Creation an Economic Growth

102. In the development of a national broadband plan, the Recovery Act requires that the Commission include "a plan for the use of broadband infrastructure and services in advancing . . . job creation and economic growth."[140] We seek comment generally on how to interpret and implement this directive, including an analysis of existing Commission and other

agency policies, programs, and proposals designed to advance the policy goals of the Recovery Act. For example, how should we evaluate the impact of the Recovery Act grant and loan programs addressing job creation in the process of broadband deployment? Further, how should the Commission consider the role of broadband as an enabling infrastructure for the creation of jobs and economic growth? Would the ability to assemble a geographically dispersed workforce on a broadband network result in the creation of new jobs and economic growth, as well as creating opportunity for dispersed workers to compete for otherwise existing jobs? Are there particular elements of a broadband network, for example security of communications, that are essential to realizing the job creation potential of a broadband network? Are existing broadband networks and existing technologies, such as video-conferencing, sufficient to enable a dispersed workforce to assemble over a broadband network or will new technologies be required? Toward this end, how should we factor in considerations such as speed when considering the role of broadband in our economic competitiveness globally?

Response: Again, this is an excellent idea. Please refer back to the previous Items where the need for the local meeting place and technical support center is paramount. This is not just a matter of committing money. It is flesh and blood and the winning spirit in those community centers that will make this work.

(Given the added dimension of the community digital center with the orange aprons, we have as yet to find someone who thinks that this is a bad idea.)

103. We also seek comment on how we can work with the Department of Labor to maximize the positive economic impact a broadband development plan would have on the United States economy and the American worker.

Response: Pass.

12. Other National Purpose

104. The Recover Act directs us to include in our national plan a consideration of "other national purposes" that could be advanced by broadband infrastructure and services.[141] We seek comment on how to interpret and implement this portion of the Act. Specifically, we seek comment on other national purposes not mentioned elsewhere in this NOI, their risks and rewards, and how the could be effectuated by national broadband access. For example, in what other ways can broadband infrastructure and services stimulate economic and social development? Additionally, we seek comment on the impact that ensuring access to broadband capability for all Americans will have with respect to America's competitiveness in the global economy. Likewise, as the Commission compares broadband deployment in the United States with multiple communities around the globe, how should we incorporate the lessons we learn into the development of our own national broadband plan?

Response: We believe that we have introduced comment in many places throughout this response that address many national purposes. Please refer to the specific sections for details.

105. We seek comment on whether a national broadband plan is an appropriate forum for addressing other known risks associated with Internet access.[142] We seek comment on whether the Commission should address traditional malfeasance that has been exacerbated by ubiquitous access to the Internet, like online child predators and cyberbulling. We also seek comment on whether the Commission should address novel issues unique to the Internet, like the potential privacy, economic, homeland security, and other issues associated with cloud computing.

Response: We'll pass on most of these items as the solution to these problems deserves the attention of specialists in those respective areas… except for the specific entry on cloud computing.

As the concept of cloud computing matures, the issues of security are now being surpassed by the issues of integration. Straightforward models are now emerging relative to integration. Our approach to the incorporation of cloud computing resources in combination with low cost or publicly available computers is one of the keystones in the National Library Technology Program. Our findings are that this approach is a tremendous benefit to many of the other programs discussed. But there is no clear cut winning solution to the technology… as well there never is.

Of the many offerings, the Microsoft offering, the Google offering, the Amazon offering, and a number of vertical offerings for the small business environment all look good for their purposes as well as a number of tools from the ecosystem that are used to access these vast resources. Consequently, we recommend for the purposes of these public facilities we have referenced that no specific variant of the technology be singled out in the strategy, but attention be called to the dramatic computing power made available to small businesses and community efforts by the new broadband initiatives.

G. Relationship between the Recovery Act an Other Statutory Provisions

106. The Recovery Act tasks the Commission with the development of a national broadband plan, which could include everything from policies the Commission can implement within its other statutory authority to recommendations to Congress regarding proposed policies or programs to be overseen by other governmental or non-governmental entities. Accordingly, we seek comment on how the national broadband plan should account for the variety of previously existing statutory provisions that touch on broadband, and seek comment on where authority may be needed or where resources should be directed as a part of the national broadband plan the Commission will report to Congress. While discussion in this *Inquiry* often details the policies and programs at the Commission, we ask that parties not limit the scope of their comments on the national broadband plan only to programs within the policy making authority of the Commission.[143]

Response: Pass

107. We seek comment on how the Commissions development of a national broadband plan under the Recovery Act relates to other statutory provisions. As noted above, the Commission has a variety of policies and statutory directives relating to broadband, both long-standing and recent. For example, the Commission has encouraged broadband deployment and promoted the public interest through policies such as universal service and competition for telephone and video services. Also, several recent Acts of Congress have required the Commission (and other agencies) to collect specific information, evaluate, provide recommendations, or report on broadband deployment. We seek comment on how these existing Commission activities and policies intersect with and can support the Commissions requirement to develop a national broadband plan.

Response: Pass

108. We seek comment on the relationship between the Commissions development of a national broadband plan and the requirements Congress set forth in the BDIA. Specifically, through the BDIA, Congress recently amended reporting obligations under section 706.[144] We seek comment on the relationship between the amended section 706 reporting and analysis

requirements and the development evaluation of a national broadband plan.[145] Will this information be sufficient to support the plans of the status of deployment of broadband service," or is something more required?[146] Similarly, we seek comment regarding how the Commission should integrate the other information collection and analysis required of the Commission in the BDIA.[147] For example, the BDIA tasks the Commission with cataloging geographical areas that are not served by any provider of advanced telecommunications capability."[148]

Response: Please refer to the earlier comments regarding the recommendations for creating the national broadband mapping and the data warehouse of data collected and cleansed to support the various layers required by the various stakeholders.

109. We also seek comment on how the broadband elements of the 2008 Farm Bill relate to the Commissions development of a national broadband plan.[149] Specifically, the 2008 Farm Bill requires a the Commission, in a separate proceeding, to develop comprehensive rural broadband strategy," including recommendations to Congress.[150] We seek comment on whether and how the Commissions comprehensive rural broadband strategy should become a part of its development of a national broadband plan. Further, we seek comment on how the Commissions directive under the 2008 Farm Bill to identify and promote a government-wide strategy, including federal, state, regional, and local government agencies, will relate to or can be incorporated into our development of a national broadband plan.

Response: Pass

110. We also seek comment on how the Communications Act and other relevant statutory provisions should inform our development of a national broadband plan. For example, in section 230(b) of the Act, Congress describes a national Internet policy. Specifically, Congress states that it is the policy to of the United States preserve the vibrant and competitive free market that presently exists for the Internet"[151] and "to promote the continued development of the Internet."[152] And in section 706(a) of the 1996 Act, Congress charges the Commission with "encourag[ing] the deployment on a reasonable and to timely basis of advanced telecommunications capability" — broadband — "to all Americans."[153] We seek comment on how these statutory provisions should inform our development of a national broadband plan. We also seek comment on how to consider the clause in section 706 that requires the Commission to take immediate action to accelerate deployment of such capability by removing barriers to infrastructure investment and by promoting competition in the telecommunications market" should the Commission find deployment of advanced telecommunications capability is not being deployed to all Americans in a reasonable or timely manner.[154]

Response: Removing barriers to shipment is the answer... the preoccupation of management in all successful ventures. When you remove all the barriers, the solution pops right out.

Go back through the comments submitted in this response and select out all the recommendations for removal of barriers. Some are financial, some are policy-based, some have to do with the training and adoption plans, and then consider removing all the barriers. A simple formula, but with time tested results.

111. We seek comment on the ways in which section 254 of the Act defines broadband-related terms in the context of universal service and how to relate these definitions and obligations to the development of a national broadband plan. For example, the Commission is tasked with basing its universal service policies on, among other things, a policy that "[c]onsumers in all regions of the Nation . . . should have access to . . . advanced telecommunications and information services."[155] Section 254 of the Act also requires the

Commission to "establish competitively neutral rules . . . to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and non-profit elementary and secondary school classrooms, heath care providers, and libraries."[156]

Response: Refer back to the strategies specifically named for supporting the libraries, the healthcare network and equipment, and the relationship between elementary and secondary schools for the out of classroom support provided by the enhanced environments at the community digital media centers. These constitute the core of a national strategy that is understandable and implementable.

H. Improving Government Performance and Coordination with Stakeholders

112. We ask parties to comment on how a coordinated effort among federal departments and agencies; tribal, state, and local governments; and interested groups and individuals may enable the nation to achieve Congress's goal that all Americans have access to broadband. We seek comment on what specific steps each of these parties should take to ensure that all stakeholders work cooperatively toward that goal. We ask, in particular, that commenters suggest both formal and informal means of coordination, and describe the information and other systems they believe may be needed to make the coordination seamless and effective.

Response: Establish a tribal council perhaps through the Ring of Nations for coordination of rapid deployment to reservations and sovereign lands. Use the various vertical programs described in this response to engage adoption and effectiveness along the lines of the Original Intent.

Work with the Broadband Coalition as a convenient communications conduit into the constituencies that you seek.

113. *Coordination among Federal Departments, Agencies, and Others.* A number of federal departments and agencies, including RUS, NTIA, and the Commission, have programs aimed at increasing the deployment and use of broadband facilities, and man of these departments and agencies are tasked with substantive broadband-related obligations under the Recover Act.[157] We seek comment on what specific steps these departments and agencies should take to cooperate with each other.[158] How, in particular, can the heads of broadband-related programs ensure that the programs are consistent with each other? What should each department and agency do to ensure that its staff has access to expertise and relevant information in other departments and agencies having responsibility for broadband initiatives? What specific steps should broadband program heads take to make staff in other departments and agencies aware of their broadband initiatives and to avoid duplication of efforts? To what extent should interagency coordination include informal staff-to-staff interactions as well as more formal contacts?

Response: Pass

114. We note that broadband itself can enhance the level of coordination among, and services provided by federal, tribal, state, and local governments. For example, the federal government's recovery.gov website provides an interactive map with links to state government websites providing information about how Recovery Act funds are being used in each state.[159] Feedback to the government is easily enabled at the recovery.gov website and many others at the federal, state and local level. What other ways are there that government at all levels can utilize broadband capabilities for coordination and best service provision? Are there best practices models that we should be aware of while crafting the national broadband plan?

Response: Review the recommendations for transmission deployment that have only briefly been described in this response. Consider the various verticals described in this response. Consider the MetroCore concept as a support for the NASA-like ecosystem you need to foster.

115. *Public/Private Partnerships and Cooperatives.* We recognize that public/private partnerships have historically achieved public goals in innovative was.[160] We seek comment on was in which public/private partnerships can collaborate to advance common broadband objectives. Likewise, we seek comment on cooperatives, including their successes and potential to meet the broadband needs of communities around the country. We ask how public/private partnerships should be structured to ensure that objectives are reached in a timely and efficient manner. Would such partnerships be more effective on a federal, state, local, or tribal level? We also seek comment on any past successful broadband public/private partnerships, as well as specific proposals for public/private partnerships in line with the objectives of a national broadband plan.

Response: Authorities as political subdivisions of states and non-profit and low-profit entities help aggregate assets and isolate liability across public and private boundaries.

116. *Information Systems and Websites.* We seek comment on specific steps federal departments and agencies should take to improve their information systems to facilitate sharing of information among different parts of the federal government, with other governmental entities, and with the public. Is there specific technology that can be cost-effectively employed for such sharing? What interim measures should the Commission and other federal departments and agencies take in the short run to improve information sharing regarding broadband initiatives? What steps should the federal government take to develop a long-term system for information sharing among departments and agencies having broadband-related responsibilities?

Response: This is a website as described. The national mapping recommendation described earlier is a more sophisticated tool that will also be well used if well developed.

117. We ask whether there should be a single website that all departments and agencies tasked with implementing broadband initiatives may use to inform members of the public regarding their programs. If so, should this website expand an existing website, such as Grants.gov[161] or cfda.gov,[162] or should a new website be established for this purpose? What specific functionalities should the website have on the user side in order to make the user experience as easy as possible? Could one application feasibly address all of a users needs while meeting other operational requirements?

Response: The national mapping tool is actually a distributed that would use the mashup characteristics of the Web 2.0 environment to integrate the parts. It would not be a simplistic entry-level gadget.

118. We also seek comment on how the federal government can use web-based systems to coordinate broadband rollout with tribal, state, and local governments and other interested groups and individuals. We ask how these systems may be made accessible to individuals with disabilities. We also ask whether we should develop other systems specifically to assist individuals and organizations that lack broadband access.

Response: Please refer to the Item covering disabilities. Section 508 of the American Disabilities Act applies.

119. *Case Workers.* There are a variety of broadband grant and loan initiatives administered b numerous agencies. Some have suggested a benefit stemming from a single point

of contact within the government. We ask whether each potential grant or loan applicant should be assigned a case worker to help sort through the various broadband programs to determine which would be the most likely to meet the applicant's needs, and to assist in the application process and provide further guidance in the event the applicant receives a grant or loan. Such a program could be patterned after the program the Arm has developed to assist patients at Walter Reed Arm Medical Center.[163] We seek specific input regarding the details of how a case worker system would operate in an environment where a single applicant might need to interface with multiple agencies. In particular, should a case worker, in addition to assisting a grant or loan applicant, serve as a central point of contact for federal government staff and other interested parties to obtain information regarding the applicant and the status of each grant or loan for which the applicant has applied? If so, should the case worker have access to confidential information regarding the applicant and be able to share that information with the federal agency personnel responsible for processing a grant or loan application pending in another agency?

Response: The convenient approach is to be able to select a single entrypoint and have a caseworker assigned, and have the caseworker responsible for syndication of the matters between the various agencies. This is the way commercial banks handle syndications for commercial loans… the financial control considerations are pretty similar… and it has worked pretty well for the last 400 years. But the catch is... the caseworkers need to be skilled in the tasks of syndication. In banks, only a handful of bankers handle syndications, and syndications are typically the largest loans a bank makes.

120. *Confidential Information.* We ask the parties to address the extent to which federal departments and agencies will obtain confidential information in the course of discharging their broadband-related responsibilities. We invite comment on what confidentiality laws or rules might be implicated by the exchange of information among federal departments and agencies, and between those departments and other governmental entities, non-governmental organizations, and individuals. Should employees at one agency have access to otherwise confidential information held by another agency when that information may be relevant to the first agency's performance of its broadband-related responsibilities? How can the federal government best protect confidential information while complying with the Confidential Information Protection and Statistical Efficiency Act of 2002,[164] the Freedom of Information Act,[165] the Paperwork Reduction Act,[166] and other potentially applicable laws?

Response: Pass

121. We also ask what laws and regulations would apply to tribal, state, and local governments and non-governmental entities in the event they receive confidential information in connection with broadband-related initiatives? How can these entities most easily comply with applicable statutes and rules, and what can the government do -- beyond -- its current procedures to help tribal, state, and local governments and non-governmental entities secure confidential information? Suggestions should account for electronic and interpersonal exchanges, as well as electronic and non-electronic data storage.

Response: Pass

122. *Data Sharing.* In creating a national broadband plan, the Commission is given the opportunity to access all of the BDIA data procured b other government agencies in their compliance with the BDIA.[167] We seek comment on the most efficient and effective methods of acquiring these data, and whether there are any complications, such as privacy restrictions, that need to be resolved. We seek submission of studies, surveys, and reports that are relevant to the development of a national broadband plan, and are considering cataloging them for public use. We also seek comment on other potential sources of data to help us measure the nation's progress

toward achieving universal broadband availability.

Response: The control of the national broadband map requires a multilevel grant of authority for access to data. Some of this data will have been collected by state and regional authorities and entities under nondisclosure agreements that prevent disclosure of raw data to other groups that are not under nondisclosure. Some data that is aggregated at summary levels is available for public consumption.

This is a matter for legal counsel, but it would seem that the owner of confidential information controls access. And in that vein, you would need to have nondisclosure rights all the way back to the source of data unless it is in the public domain.

IV. CONCLUSION

123. We recognize the gravity and scope of this forward-looking undertaking, the incredible value of ubiquitous broadband, and the difficulties that lie ahead in ensuring its availability. While bold action may be necessary, we recognize the need to approach an endeavor as vital as a national broadband plan with a spirit of collaboration, transparency, and openness. Accordingly, we seek comment on those issues discussed above, as well as any facts or issues not otherwise addressed in this NOI relating to the adoption or implementation of a national broadband plan.

Response: We are available for discussion on any other item. We have tried to weave other ancillary comments into the thread of the comments above.